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This magazine is published to promote sound thought concerning industrial medicine and the surgery of trauma. To that end it will contain articles, news items, reports, digests, and other presentations, together with editors' comments. The editorial policy is to encourage frank discussion. On this basis contributions are invited. The editors will exercise care in checking on the accuracy of data printed but in all other respects articles and opinions of which expression is allowed are the opinions of their authors—the editors reserving in all cases the right to comment on the same in the current or any subsequent issues as they may be inclined.

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1953 INDUSTRIAL HEALTH CONFERENCE

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FENN E. POOLE, M.D., 46, Second Vice-President of the Industrial Medical Association, was killed instantly in an automobile collision early Sunday morning, September 21, at Los Angeles, California. He had just flown in from Seattle and was driving home from the airport alone, when his car was hit at an intersection. DR. POOLE was Medical Director for Lockheed Aircraft Corporation and Vega Aircraft Corporation, Medical Director for the Rexall Drug Company and Vice-President of Riker Laboratories, a Rexall subsidiary. He was the first chief of staff at St. Joseph's Hospital, Burbank, and had served on the staff of the College of Medical Evangelists at Loma Linda, where he received his degree in 1931. He was also on the staff of General Hospital and Hollywood Presbyterian Hospital. He belonged to the Aero-Medical Association, the Airline Medical Directors Association, Western Industrial Medical Association, American and California Medical Associations, and the Los Angeles County Medical Society. He had been in industrial medical work since 1937, was distinguished as physician and surgeon, and was nationally known as an authority on industrial and aero medicine.

WILLIAM R. POWELL, M.D., has been appointed Chief Surgeon of the Texas Mexican Railway, succeeding the late DR. S. H. GRAHAM, SR. DR. POWELL'S headquarters will be in Laredo, Texas.

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C. BOYD SHAFFER has been appointed industrial toxicologist in American Cyanamid Company's Central Medical Department. He will be in charge of toxicological investigations of all company products except chemotherapeutic and biological agents, and will work in close liaison with the company's Stamford Research Laboratories in Stamford, Connecticut. DR. SHAFFER was formerly connected with the Union Carbide and Carbon Corporation at Mellon Institute in Pittsburgh. He received his Ph.D. in physiology and biochemistry at Princeton in 1941.

THE Industrial Nursing sessions of the 40th National Safety Congress and Exposition will be held in Chicago, October 20-24. With DR. T. R. VAN DELLEN, Medical Director, *Chicago Tribune*, as Moderator, the Tuesday morning session will have as participants: LESLIE A. BRANDT, Peoples Gas, Light & Coke Co., Chicago; WARREN A. COOK, Zurich-American Insurance Companies; DR. ARTHUR K. PETERSON, R. R. Donnelley & Sons Co., and ESTHER RAMSAY, R.N., Sinclair Refining Co. The subject will be "The Impact of Temporary Disability on Industry." The Wednesday morning program will lead off with a talk by J. E. NICHOLS, Safety Director, Reynolds Metals Co., on "Sight Conservation in Industry." The growing number of older workers who will retire on pensions from industry or government makes DR. H. B. ROBSON'S talk on "Conditioning for Retirement" a timely one. DR. ROBSON is Medical Director for General Motors of Canada, Ltd. DR. C. F. SHOOK, Medical Director, Owens-Illinois Glass Co., will conclude the Wednesday session with a discussion of "Just People." DR. SHOOK will stress the duty of the industrial nurse not only in caring for the injured worker but also in serving as a listening post for his physical and emotional complaints. The Thursday luncheon session will hear DR. G. H. GEHRMANN, Medical Director, E. I. du Pont de Nemours & Co., present "A New Approach to Safety."

Detroit TV

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Who Work in Industry," with a sub-theme, "How the Automobile Industry Safeguards the Health of Its Workers." This was prepared under the guidance of the Institute of Industrial Health, and the four participants. The program was introduced by DR. E. A. IRVIN, President of the Industrial Medical Association, who outlined the scope of the Industrial Medical Association, and its interests in the health of the workers in America generally. DR. CLIFFORD H. KEENE, Medical Director, Kaiser-Frazer Corporation, discussed the value of the physical examination, the preplacement examination, and the scope of the medical care provided by a medical service in industry. MR. RALPH SMITH, Chief Chemist, Bureau of Industrial Hygiene, Detroit Department of Health, reviewed the part played in environmental control by the industrial hygiene team. Illustrated were the uses of dust-sampling devices, sound-lever meter, and other detecting devices for common industrial hazards. The program was brought to a close by DR. W. A. DAWSON, in charge of the Medical Department of the Rouge Plant, Ford Motor Company, who discussed the plant medical services as they apply to accidents or sicknesses occurring to the employee while he is on the job. The program was given under the sponsorship of the Michigan Health Council, which has this half hour available to it each week. Further programs designed to acquaint the public with the activities and services of industrial medicine will be given. The Institute of Industrial Health will serve in a consulting capacity.

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REFERENCES:
1. Gastric Tolerance for Aspirin and Buffered Aspirin. Ind. Med. 20:480, Oct. 1951.
2. Effect of Buffering Agents on Absorption of Acetylsalicylic Acid. J. Am. Pharm. Assoc., Sc. Ed. 39:21, Jan. 1950.

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FOLLOWING is a list of the appointees and staff of the Institute of Industrial Health, University of Michigan, for the fiscal year July 1, 1952, through June 30, 1953: HAROLD RICHARD BLACKWELL, PH.D., will be in charge of investigative developmental work in physiological optics. DR. BLACKWELL was born in Harrisburg, Pennsylvania; received his B.S. from Haverford College in 1941, his M.A. from Brown University in 1942, and his Ph.D. from the University of Michigan in 1947. Prior to coming to the University of Michigan, he was a research assistant in the National Defense Research Committee at Brown University in 1942, Research Psychologist in the Polaroid Corporation, Cambridge, in 1943, and Research Associate in the National Defense Research Committee, L. C. Tiffany Foundation, Oyster Bay, in 1943 and 1945. In 1947 he received the Army-Navy Certificate of Appreciation for wartime research, and he was also awarded the Adolph Lomb Medal of the Optical Society of America for "noteworthy contribution to optics," in 1950. He is a member of the Optical Society of America and the Illuminating Engineering Society, an associate in experimental psychology in the American Psychological Association, and is at present Director of the Vision Research Laboratory of the University of Michigan, a post he has held since 1946, and in which he will continue while devoting half-time to his new position in the Department of Ophthalmology. He is also Executive Secretary of the Vision Committee of the Armed Forces-National Research Council. Assisting DR. BLACKWELL in physiological ophthalmology are JOHN H. TAYLOR, PH.D., and JAMES G. OHMART. RALPH W. RYAN, M.D., who has been a member of the Department of Ophthalmology of the Medical School for the past three years, will conduct a field survey in industrial ophthalmology ... WALTER D. BLOCK, PH.D., has been placed in charge of the toxicological division and biological research in industrial dermatology. DR. BLOCK was born in Dayton, Ohio, and was graduated from the University of Dayton with the degree of B.S. in Chemistry in 1933. He then entered the Department of Biological Chemistry at the University of Michigan and in 1934 was granted his M.S. in Biological Chemistry. During this year he was a research assistant, collaborating with DR. A. A. CHRISTMAN in developing a method for the determination of carbon monoxide in air. In 1935 he became a teaching assistant, and in 1938 he was awarded his Ph.D. From 1939 to 1944 he was an instructor and research associate in biological chemistry, and from 1944 to 1949 Assistant Professor and Consulting Chemist to the clinical laboratories of the University Hospital. From 1939 to 1949 he organized and was in charge of the laboratories of the Rackham Arthritis Research Unit. Since 1949 he has been consultant to several industrial chemical companies and private clinical biochemical laboratories. His investigations cover a wide range of interests in the field of biological chemistry. He is a member of the American Association for the Advancement of Science (Fellow), the American Chemistry Society, the American Society of Biological Chemistry, and the Society for Experimental Biology and Medicine. Assisting DR. BLOCK is GEORGE SHERMAN WELLS, PH.D., formerly instructor in the Department of Biochemistry-Nutrition, Tufts Medical College .... MERLE LAWRENCE, PH.D., will be in charge of investigations in the field of physiological acoustics and will also serve as Associate Professor of Physiological Acoustics in the Medical School, University of Michigan. DR. LAWRENCE was born in New York State; he received his A.B., M.A., and Ph.D. degrees from Princeton, the last in 1941. He then studied at Johns Hopkins Hospital under a National Research Council Fellowship, investigating the cause of auditory impairment for high tones. From 1941 to 1946 he was a naval aviator in the U.S. Navy, serving overseas part of the time, but returning to the School of Aviation Medicine at Pensacola in 1944 for research work on the acoustic properties of oxygen masks, hearing tests for flight personnel, and flight training procedures. In 1946 he was head of the Human Engineering Studies in the Aviation Branch of the Research Division of the Naval Bureau of Medicine and Surgery. From 1946 until now he has been with the Department of Psychology at Princeton University as Assistant Professor and Associate Professor. During this period he was engaged in research in problems of sound conduction in the ear, under a Naval Research contract, and has also been Associate in Research at the Lempert Institute of Otology and the Lempert Research Foundation. He is a member of Sigma Xi, the Otosclerosis Study Group, the American Psychological Association, the Aero Medical Association, and the Acoustical Society of America .... MISS VIRGINIA WILSON, M.S., will serve as Technical Director for the training course in physiotherapy which is being jointly sponsored by the University and the Institute for the training of technicians in physical medicine and rehabilitation .... REPLACING CHARLES H. TUPPER, M.D., who has left the Institute for Army service, will be ROBERT J. BOLT, M.D., who will participate with DR. H. MARVIN POLLARD in the statistical and clinical appraisal of periodic health examinations .... WILLIAM G. FREDERICK, SC.D., has joined the Institute staff as a Consultant in Industrial Hygiene and Safety. DR. FREDERICK is in charge of the Bureau of Industrial Hygiene, Department of Health, City of Detroit. This appointment adds one more member to the group of consultants which now consists of CARL E. BADGLEY, M.D., Chief, Department of Orthopedic Surgery, University Hospital and Medical School; CLARENCE D. SELBY, M.D.; and CAREY P. McCORD, M.D. .... THE BOARD of Governors of the Institute includes MARVIN L. NIEHUSS, Vice-President and Dean of Faculties of the University; MAX R. BURNELL, M.D., Medical Director, General Motors Corporation; A. C. FURSTENBERG, Dean, Medical School, University of Michigan; MICHAEL GORMAN, Flint, Michigan; CYRUS C. STURGIS, M.D., Chairman, Department of Internal Medicine, University of Michigan Medical School; HENRY F. VAUGHAN, DR. PH., Dean, School of Public Health, University of Michigan. O. T. MALLERY, JR., M.D., Director of the Institute of Industrial Health, reports that other appointments are pending in dermatology, industrial hygiene and safety, and for fellowships in occupational medicine.

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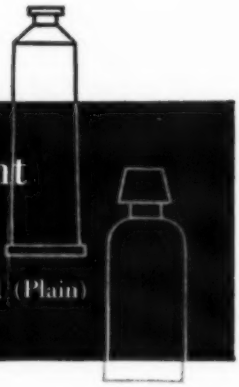

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*Combes, F. C.; Zuckerman, R., and Kern, A. B.: Chlorophyll in Topical Therapy, New York State J. Med. *52*:1025, 1952.

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Industrial Medical and Related Chronology selected and arranged by ROBERT T. LEGGE, M.D., F.A.C.S., Berkeley, California

"Sing of a land God-fearing, where the school and the steeple rise, and sons are taught of sires who fought in liberty's enterprise—Ah, you will sing of a wilderness won, of the pioneers of a nation begun, and a prairieland fertile where yieldings are strong and peace is its own reward, while freedom is part of the song of its heart: of the hammer, the nail—and the Lord!" —*Ryder*

♎ = Libra — September 22-October 22 ‖ ♏ = Scorpio — October 23-November 22

1952 OCTOBER

OCTOBER—and a suggestion of Faith: "When autumn haunts the fields, and gold and russet coverings overlay the hill, and little feather coats are seeming shields against the early chill; and when ecstatic notes of morning prayer and evening hoverings have ceased, and they prepare on far-adventuring wings to fare, your bird that now this summer for the first time sings would never seek the South unless the South were there!" Poetic, against the prosery of the 46-cent dollar, but remindful that even the birds agree—with all the millions who seek a renewed faith in what America stands for—that it is, indeed, "TIME FOR A CHANGE."

☽ 1st Quar. ○ Full Moon ☾ 4th Quar. ● New Moon

1 ♎ W

1873—Yale University training school for nurses was founded by Francis Bacon.
1815—Dr. Crawford Long born at Danielsville, Georgia. He and Dr. W. T. G. Morton both claimed the honor as to the discovery of the anesthetic properties of ether.

2 ♎ Th

1852—Sir William Ramsay born at Glasgow, Scotland. Professor of Chemistry University College, London. Discoverer of argon, neon, krypton, and xenon gases.
1846—Benjamin Waterhouse, one of the greatest of American physicians, died at Cambridge, Massachusetts.

3 ○ Fr

1854—William Crawford Gorgas born in Mobile, Alabama; an Army surgeon who was assigned to the place of sanitary officer in the building of the Panama Canal.
1844—Sir Patrick Manson born at Aberdeenshire; founder of London School of Hygiene; father of Tropical Medicine.

4 ♎ Sa

1836—Dr. G. V. Lafarque of St. Emilion read to the Paris Academie des Sciences his description of subcutaneous administration of solids, the development of hypodermic medication.
"Science commits suicide when it adopts a creed"—Huxley

5 ♎ S

1848—Edward L. Trudeau born in New York City. Established the Adirondack Cottage Sanitarium at Saranac Lake, and the Laboratory for the Study of Tuberculosis.
1932—The first issue of *Industrial Medicine* published on this day.

6 ♎ M

1895—Eugene Percival Pendergrass born in Florence, South Carolina. Professor of Radiology, University of Pennsylvania. Distinguished student of the x-ray manifestations of silicosis, and industrial problems.
"How much of human life is lost in waiting"—Emerson

7 ♎ Tu

1894—Oliver Wendell Holmes, professor of anatomy at Harvard University, one of America's literary men, died at Boston.
1701—A charter was granted for a College in Connecticut —later called Yale.

8 ♎ W

1932—Alexander Goodall, English physician, showed that autolyzed yeast is moderately effective against pernicious anemia.
"If a little knowledge is dangerous, where is the man who has so much as to be out of danger?"—Huxley

9 ♎ Th

1879—The *Boston Medical and Surgical Journal* editorially said: "We regret to be obliged to announce that a meeting of the councilors held on October 1 voted to admit women to the Massachusetts Medical Society."
"We know better than we do"—Emerson

10 ☾ Fr

1731—Henry Cavendish born at Nice. Son of a British nobleman; discoverer in 1766 of hydrogen gas.
1810—Jean Henri Dunant, a native of Geneva, the founder of the Red Cross, died in Haiden. He won the first Nobel Prize.

11 ♎ Sa

"The folly of mistaking a paradox for a discovery, a metaphor for a proof, a torrent of verbiage for a spring of capital truths, and oneself for an oracle, is inborn in us"—Paul Valery: Leonardo da Vinci
"Care's an enemy to life"—Shakespeare

12 ♎ S

1492—On this day in 1492 Columbus discovered America.
"I have always been among those who believed that the greatest freedom of speech was the greatest safety, because if a man is a fool the best thing to do is to encourage him to advertise the fact by speaking"—Wilson

13 ♎ M

1821—Rudolf Ludwig Karl Virchow born at Schivelbein, Prussia. One of the world's great scientists in cellular pathology.
"True, I talk of dreams, which are the children of an idle brain, begot of nothing but vain fantasy"—Shakespeare

14 ♎ Tu

1872—George C. Low, F.R.C.P., born. Director, Clinical Tropical Medicine, London School of Tropical Medicine. Discovered the escape of Felaria bancrofti through the proboscis of the mosquito.
"Nature is a discipline"—Emerson

15 ♎ W

1789—Dr. John Morgan died. He was the founder of the Medical Department of the new University of Pennsylvania.
"Knowledge is proud that he has learned so much; Wisdom is humble that he knows no more"—Cowper

16 ♎ Th

1846—At the Massachusetts General Hospital ether anesthesia first used by Morton. Dr. John C. Warren, the surgeon stated, "Gentlemen, this is no humbug."
1289—Pope Nicholas IV presented Montpelier University a new constitution, and the founding of a medical faculty.

17 ♎ Fr

1783—Harvard University Medical School founded.
"All the vast hygienic, social and moral problems of our restless, energetic labor-saving race are, in some degree, those of the future student of disease in America"—Weir Mitchell

18 ● Sa

1929—The Institute for the History of Medicine at Johns Hopkins University through the efforts of Dr. W. H. Welch was opened and solemnized.
"Orthodoxy is the Bourbon of the world of thought. It learns not, neither can it forget"—Huxley

19 ♎ S

1605—Sir Thomas Browne, educated at Winchester and Oxford for the practice of medicine, born at London. He wrote "The Religio Medici." He was knighted by Charles II in 1671.
1875—Boston Medical Library founded.

20 ♎ M

1847—Elizabeth Blackwell received from Dean C. A. Lee word that the faculty of the Medical Department of Geneva University, New York, granted her matriculation. She was the first woman to receive a medical degree in the world.

21 ♎ Tu

1833—Alfred Nobel, the dynamite king, born in Stockholm. Founder of the Nobel Prizes.
70 BC—Virgil the Latin poet was born. Most learned in medicine, described anthrax in sheep and indicates the knowledge of contagion from herd to herd.

22 ♎ W

1896—Charles Glen King born at Entiat, Washington. Professor, University of Pittsburgh; discoverer of vitamin C.
"When we administer medicine, we administer the whole world, with all its virtues"—Paracelsus

23 ♏ Th

1926—George Van Ingen Brown, a Milwaukee physician, devised an operation for cleft palate.
"The sun and the moon and the stars would have disappeared long ago . . . had they happened to be within the reach of predatory human hands"—Ellis

24 ♏ Fr

1745—Benjamin Rush, M.D., born. Signer of the Declaration of Independence.
"The first requisite of a good citizen of this republic of ours is that he shall be able and willing to pull his own weight"—Theodore Roosevelt

25 ☽ Sa

1811—Dr. John M. Riggs, discoverer and originator of the surgical method for treatment of pyorrhea, Riggs disease, born at Oxford, Connecticut. He has been called the Father of Oral Hygiene.
"He that dies pays all debts"—Shakespeare

26 ♏ S

1850—Edward C. Kendall, a pioneer in physiological chemistry, of the Mayo Foundation, discoverer of thyroxine from thyroid gland. For his isolation in crystalline form of glutathione and suprarenal cortical hormones, Nobel laureate.

27 ♏ M

1553—Michael Servetus, a Spanish controversialist and physician, burned at the stake at the instance of Calvin for heresy.
"The value of experience is not in seeing much, but in seeing wisely"—Osler

28 ♏ Tu

1899—Thomas Carwadine, English surgeon, developed a new method of excision of the rectum.
"It is with disease of the mind, as with those of the body; we are half dead before we understand our disorder, and half cured when we do"—Colton

29 ♏ W

1926—Victor Kafka Hamburg, M.C., determined the protein relation of the cerebrospinal fluid.
"Old men are fond of giving good advice, to console themselves for being no longer in a position to give bad examples"—La Roch-foucauld

30 ♏ Th

—Alfred Stille, a learned physician and scholar, born in Philadelphia. He was first to differentiate between typhus and typhoid fever. Celebrated for his work on Materia Medica and Therapeutics. His masterpiece was the National Dispensatory.

31 ♏ Fr

1950—Malcolm T. MacEachern, M.D.C.M., retired after 27 years of meritorious service, notable in which was his monumental contribution in the hospital standardization program, for the American College of Surgeons.
"Corruption wins not more than honesty"—Shakespeare

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INDUSTRIAL MEDICINE AND SURGERY
The Journal of Medicine in Industry
With which are consolidated "The Industrial Doctor" and "International Journal of Medicine and Surgery"
Volume 21 OCTOBER 1952 *Number 10*

A Survey of Industrial Medical Practices in the Greater Philadelphia Area

R. RALPH BRESLER, M.D.
Medical Director, Bayuk Cigars Inc.
Philadelphia

WHILE industrial physicians have concentrated on the technical and professional aspects of their work, many questions about the economic and administrative aspects of industrial medicine have gone unanswered. A cloak of confidentiality has covered industrial practices concerning salaries of professional personnel, payment of travelling expenses for attendance at professional meetings, payment of dues for membership in professional organizations, provisions for nurses' uniforms, and related matters. As a result, variations are notable, even among similar-sized companies in the same industry.

The present study was undertaken as the direct result of a question posed by a management-member of the Board of Governors of the Philadelphia Chamber of Commerce Safety Council to its two physician-members. The inquiring executive asked why there were no particular standards that could be used by an executive as a base against which to measure the size and performance of the medical department of his own company.

"How do I know," he inquired, "if my part-time physicians should be spending more time at the plant, or less time? How do I know if the salaries I am paying my physicians and nurses are comparable with those of other companies? If I am uninformed as to industrial medical operations in other companies, how can I tell whether I have an above-average Medical Department which deserves special recognition by way of above-average salaries?

"Without any standard to go by, how can I tell if our medical policies are too restrictive, compared with those of other companies?

"Why don't you physicians," he continued, "gather that kind of information so that we may know what industry in general is doing in these industrial medical matters?"

Why not indeed?

The Industrial Health Committee of the Philadelphia Chamber of Commerce Safety Council joined forces with the Committee on Medical Economics of the PHILADELPHIA INTERSTATE ASSOCIATION OF INDUSTRIAL MEDICINE to provide an answer to this challenging and practical problem. They would do this by sponsoring, as a joint venture, a survey of industrial medical practices in the Greater Philadelphia Area. Such a project, planned to include both large and small companies and representing different types of industry, would be of considerable worth in describing current industrial medical practices in this area. While these practices might not necessarily be considered as ideal or Utopian, nevertheless they might prove enlightening to members of industrial management.

It was decided to accomplish this project through the medium of a judiciously-worded questionnaire. Copies were distributed to the active members of the PHILADELPHIA INTERSTATE ASSOCIATION OF INDUSTRIAL MEDICINE, on the basis of one physician in each company. Where a single physician rendered part-time in-plant service to more than one company, he was provided with one copy for each company so served.

It was unanimously agreed that the only way to obtain frank and honest information was to guarantee the anonymity of the replies. Such a procedure was outlined in the following letter which accompanied the questionnaire:

"1. This questionnaire is being mailed only to those industrial physicians who are engaged in full-time or part-time IN-PLANT medical service.

"2. If you are serving two or more companies, a separate questionnaire should be submitted for each. Additional blank questionnaires can be obtained from the office of the Managing Director, Philadelphia Chamber of Commerce Safety Council.

"3. Anonymity of the questionnaire can be assured in the following manner: (a) Use a typewriter or print the answers. (b) Do not sign the questionnaire. (c) Do not indicate a return address. (d) Enclose the completed questionnaire in the smaller blank envelope, seal the envelope, and print on its face 'Industrial Questionnaire.' Enclose this in the larger addressed envelope and mail. The Managing Director will destroy the outer envelope and forward to the Committee only the sealed inserts.

With the cooperation of GLENN S. EVERTS, M.D., Chairman, Industrial Health Committee, Philadelphia Chamber of Commerce Safety Council.

"4. If you serve several plants of the same company, and company policies and practices are the same in each, only one questionnaire should be submitted."

It should be noted that the total number of replies varies somewhat with the different questions. This occurred because some of the responding physicians did not answer all of the questions, either accidentally or by design.

I. Description of Group Reporting

SIXTY-FOUR questionnaires were sent to companies of various sizes and in various industries. Thirty-six were completed and returned, a percentage return of 56.3%.

The companies participating in this study are described as follows:

A. Number of employees:

Size of Company	Number Reporting
100-500 employees	6
500-1000 employees	5
1000-5000 employees	10
Over 5000 employees	15
Total	36

B. Degree of hazard for injuries:

Degree of Hazard	Number Reporting
Heavy	6
Medium	19
Light	11
Total	36

C. Degree of hazard for occupational illness:

Degree of Hazard	Number Reporting
Heavy	3
Medium	7
Light	26
Total	36

The composition of the reporting group was considered highly suitable for the purpose of the questionnaire, since it represented both small and large industry, with the median in the 1,000 to 5,000 employee group.

Similarly, the group represented, on the average, a medium hazard for occupational injuries and a light hazard for occupational illness, the typical picture for industry in this area.

II. Administrative Status of Medical Department

INDUSTRIAL physicians have placed considerable importance on the administrative status of the Medical Department in the company organizational set-up. It has been generally considered desirable that the Medical Director have direct access and report directly to some responsible member of management. To determine current practices in this respect, the following questions were placed before the participating group:

A. To whom is the Medical Director directly responsible?

Title	Number
Management	7
Executive vice-president (includes general superintendent, v.-p. operations)	3
Personnel director (includes v.-p. personnel, personnel manager, manager industrial relations, director employee relations)	17
Assistant manager industrial relations	1
Total	28

B. What is the direct chain of command from the Medical Director to top management?

Title	Number
M.D. to personnel director to President	17
M.D. to personnel director to general manager (or executive v.-p.) to President	5
M.D. to President	4
M.D. to v.-p. to President	4
M.D. to superintendent to v.-p. to President	2
M.D. to assistant secretary to President	1
M.D. to asst. mgr. indusrial relations to manager industrial relations to President	1
Total	34

Viewed from another standpoint, consideration was given to the number of individuals in the chain of command between the Medical Director and the President. Where the Medical Director reported directly to the President, he was considered one step away. With this as a basis, the following table illustrates the relationship between the Medical Director and the President among the participating companies:

Steps between Medical Director and President	Number
One step	4
Two steps	22
Three steps	8
Total	34

III. Medical Policies

AN IMPORTANT point of discussion among industrial physicians has been medical policies. The following questions were included in the study in order to ascertain policy practices among the group:

A. Who establishes medical policy in your company?

Title	Number
Management	3
Medical Director	5
Management and Medical Director jointly	27
Industrial relations dept., Medical Director and Management	1
Total	36

B. To what extent do you care for non-job-connected or outside injuries?

Extent	Number
Emergency care only	28*
As long as necessary	7
Not at all	1

*Five physicians in this group reported that they administered care as long as necessary if the injuries were minor in nature.

C. To what extent do you treat non-occupational illness?

(Because of the well-known fact that actual practice did not always coincide exactly with official company policy, participants were requested to indicate both the company policy and their actual practice with respect to the treatment of outside illness.)

Extent	Company Policy	Actual Practice
Not at all	5	2
Once	17	12
Twice	3	7
Three times	1	1
Until cured	4	6
Depends upon illness	1	7
No company policy	3	—
Don't know	2	—

It is evident from these figures that physicians are interpreting company policies rather liberally. Apparently they feel that treatment of ambulatory employees on the job in accordance with the physician's judgment is more advantageous in maintaining production than rigid adherence to an official company policy. In no case was the reporting physician less liberal with treatment than the company policy permitted, and, in many cases, he was more so.

It is interesting to note that two of the reporting physicians did not know whether there was a company policy with respect to such treatment, or, if such a policy existed, what it authorized.

D. Does your company policy restrict you in administering a well-rounded industrial medical service?

Reply	Number	*COMMENTS:
No	29	Management refuses to allow industrial hygiene survey; therefore several potential industrial health hazards are not being dealt with.
Yes	7*	

We are restricted in treating personal illness (non-job-connected).
Management refuses to establish x-ray facilities and laboratory.
Management insists on strict requirements for pre-placement physical examinations rather than selection and placement according to the capacity of the applicant.
Management restricts periodic physical examinations.
We do not have 24-hour coverage in our dispensary.

The foregoing comments were made by most of those who considered their efforts restricted. Just how well justified these complaints are is an open question. Some indicate an obvious failure on the part of the reporting physician to have convinced his management of the economic and other advantages to be derived from proper and modern industrial medical procedures. Certainly, it should not be too difficult to substantiate the advisability of adequate industrial hygiene measures from the economic standpoint alone.

The restrictions on the treatment of personal illness, the refusal to establish x-ray and laboratory facilities and 24-hour medical service may be sound management decisions, dictated by conditions in the individual plant, such as the size of the employee population, the economic situation, seasonal fluctuations, labor-management tensions, and related factors.

E. In your company, do you think that union-management relationships are responsible for a restricted medical policy on the company's part?

Reply	Number	*COMMENT:
No	26	Union unreasonable in demanding payment for people spending time in dispensary for non-occupational conditions.
Yes	5*	
Non-union	4	

F. In your company, does the union attempt to dictate any policies regarding the extent to which you treat an employee professionally?

Reply	Number	*COMMENTS:
No	25	Union often interferes in trying to make a non-compensable case into a compensable one.
Yes	7*	
Non-union	4	

Union attempts to include everything as a free service.
Union has blocked efforts to carry out a periodic health program.
Union insists that pay be given to employees sent out for x-ray for their own benefit.
Union refuses to allow physical examinations on older employees.

Here again, the comments can be variously interpreted. It is certain that union stewards are zealous in their efforts to prevent any procedure which in their opinion may jeopardize the job security of any union member. It is possible that such efforts may go so far as to interfere with the normal working of a company Medical Department, and redound to the disadvantage of the member-employee. It is equally a fact that some ill-advised companies have in the past utilized medical information for anti-union purposes. No doubt this occurs only rarely in these days of more enlightened industrial relations, yet the memory of past events still remains to condition union personnel against certain types of examination procedures.

IV. Professional Organizations

THERE has long been a question as to whether physicians and nurses attending conventions of their professional organizations should be required to pay their own expense or have such expense borne by the companies they represent. The same question exists with regard to payment for memberships in professional organizations. In order to ascertain current practice in these respects, these questions were posed:

A. In attending an out-of-town industrial physicians' or industrial nurses' convention, representing your company, what portion of the expense involved is paid by the company?

Reply	Physicians	Nurses
All	26	25
None	6	7
Do not attend	3	1

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B. Does your company pay the annual dues for the physician who becomes a member of the following types of organizations:

	Yes	No
1. Local and national industrial medical groups	11	23
2. Affiliated organizations (industrial hygiene, public health, safety groups)	8	23

C. Does your company pay the annual dues for the nurse who becomes a member of the following types of organizations:

	Yes	No
1. Local industrial nurses group	10	18
2. National industrial nurses group	9	18

V. Survey of Professional Salaries

THE PROBLEM of establishing a proper and adequate salary level for physicians and nurses in industry has long existed. Because of its confidential and personal nature, salary information concerning professional personnel has not been easily available. This questionnaire was specifically constructed for anonymous reply in order that full and accurate information could be given. The information below summarizes the replies received. It is to be emphasized that these salary figures are presented without the author's opinion as to their suitability or adequacy. They represent the average salaries which are being paid at this time to professional personnel in industry in the Greater Philadelphia Area.

A. *Nurses' Salaries:*

Salary information was submitted for both supervisory and staff nurses, in ranges from minimum to maximum, in dollars per year. Figures in parentheses indicate salaries in dollars per week.

	Supervising Nurse	Staff Nurse
Lowest minimum	2600 (50)	2340 (45)
Average minimum	3317 (64)	2960 (57)
Highest maximum	7200 (138)	6000 (115)
Average maximum	3992 (77)	3634 (70)
Average salary	3655 (70)	3297 (63)

There is a surprisingly great range between the lowest minimum and the highest maximum for both supervising nurses and staff nurses. This is another indication of the fact that little salary information has previously been circulated, so as to establish some sort of common denominator upon which management might have based an average salary level.

The average salaries compare favorably with those of nurses in other fields of nursing. The comparison is all the more favorable when one takes into consideration the many advantages presented to the nurse in industry: regular hours, social security coverage, interesting work, paid vacations, and many other employee benefits given in industry, including sick pay plans, hospitalization, retirement plans, etc.

B. *Physicians' Salaries:*

(1) *Full-time:* Fifteen physicians reported salaries on a full-time basis, as follows:

Maximum salary	$20,000
Minimum salary	7,800
Average	$13,233

It is interesting to note that of the 15 physicians reporting, only one reported a salary of less than $10,000 annually, and this one lowered the general average somewhat.

(2) *Part-time:* Twenty-one physicians reported salaries earned on a part-time basis, as follows:

	Minimum	Maximum	Average
No. of hours weekly	4	25	10.4
Salary per hour	$5.30	$10.90	$8.63

Lowest part-time salary $1,872 ($36.00)*
Highest part-time salary $11,050 ($212.50)
Average part-time salary $4,667 ($89.75)
*Figures in parentheses indicate weekly salary.

These figures include salaries paid to new and relatively inexperienced part-time physicians as well as those well-trained in industry with long experience.

VI. Health Maintenance Procedures

TO DISCOVER current practice with regard to health maintenance procedures in general, and periodic physical examinations in particular, these questions were included:

A. What is the practice in your company with regard to in-plant health maintenance procedures?

Reply	Number
Periodic physical examinations	27
Periodic physical examinations including laboratory, x-ray and electrocardiographic examinations	4
None	3

B. If your company has such a program, to whom is it applicable?

Reply	Number
Executives only	3
Executives and supervisory personnel	6
All employees	21
Individuals in hazardous occupations only	3
Hourly employees only	1

It seems that there must have been some misunderstanding in the minds of the respondents with regard to these questions. Evidently many of the physicians have confused "periodic" and "pre-placement" examinations. From the author's personal experience with industrial medical conditions in this area, it is certain that proportionately few companies maintain the personnel and facilities required to perform adequate periodic examinations. Pre-placement examinations, on the other hand, are routine in

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almost all of the companies maintaining a medical service. The fact that the great majority of companies reported the existence of a periodic examination program covering all of the employees further indicates the likelihood that the question was misinterpreted.

Summary and Conclusions

THROUGH the medium of a questionnaire-survey made among various companies in the locality, a picture of industrial medical practices and policies in the Greater Philadelphia Area is presented. This indicates that in industrial medical matters, there is a wide range in policies, practices and salaries, wider in general than similar non-medical matters which have been more widely publicized within the various trade associations. It is emphasized that the facts and figures given here pertain only to the Greater Philadelphia Area. Local conditions in other sections of the country must be taken into consideration before basing decisions on the information here presented.

(9th and Columbia Ave.)

The Welfare State

IT IS CUSTOMARY to point a finger overseas when we talk about the disadvantages of the Welfare State. But right here at home we also have a striking example of what a Welfare State does for its people. Let's take a look at what the Federal government has done for the American Indian. Here are some important truths about the Indians whose kindly government proposed, 125 years ago, to help them along briefly and then make them free: Today a restricted Indian cannot buy, sell, or lease property except with Indian Bureau consent; he cannot have access to his money deposited for him in the Federal Treasury except by act of Congress; he cannot engage in free and unrestricted business enterprise on the reservation because the Indian Bureau has its own specially sponsored corporations to handle business matters for the Indians; he is totally dependent upon the Indian Bureau when he is out of a job, sick, or when incapacitated by old age; he cannot buy, sell, or consume alcoholic beverages either on or off the reservation; if he should happen to be a war veteran he cannot, as a rule, obtain a loan under the GI bill of rights because his property is tied up in Indian Bureau trusteeship; for each individual Indian it takes in most cases a special act of Congress to be freed from the restrictions imposed by the Indian Bureau. Senator George Malone, who has lived for years near Indian reservations in Nevada, is sick at heart at the obvious signs of a miserably dependent and disappearing race. "Government paternalism at its worst is strikingly exemplified in the Bureau's relationship to the Indian," he says. "It has undermined the confidence of the Indian in himself.... If such supervision and censorship should have been exercised over the people of any other nationality in the United States, their growth and individual development would have been retarded in like manner." Although the demand to abolish the Indian Bureau has been made in Congress year after year and has failed because so few people are acquainted with or care about the Indian's plight, it is being voiced again this year. But Senator Malone is trying to arouse the public to the danger of any form of government paternalism. "The most difficult thing in the world," he emphasizes, "is to remove a system of any kind which is organized to supervise somebody and handle his money and property, so long as the money and property hold out." *Government today is taking an average of 32% of the earnings of all American citizens. Its bureaus are proposing all kinds of "social aid" plans. Are we silly enough to fall for more of this? Take another look at what the government has done for the American Indians.*

—DR. GEORGE S. BENSON, President, Harding College, Searcy, Arkansas, in *GM Folks*, September, 1952.

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Research on Chronic Toxic Effects from Long Exposure to Vapors of Pure Gasoline

DOCTORS A. AMORATI; C. CACCIARI; and F. M. TROISI
Bologna, Italy

AN INVESTIGATION was carried out on 39 women employed for many years making sanitary items of rubber (nipples, gloves, prophylactics) and thereby having been exposed for a remarkably long time to vapors of pure gasoline used in the working process. These women received clinical examinations and liver and renal functions tests. From this investigation, no pathological data were derived indicating definite chronic toxic effects. It is thought interesting to report the results of the research, since the literature on a chronic toxic action from gasoline vapors appears uncertain as to significance.

It is to be recognized that gasoline is not a definite chemical compound, as it is composed of many products of oil distillation. Data as to pathology from a gasoline chronic intoxication reported in literature may refer to any of various products of its composition. Ordinary gasoline is composed mainly of saturated aliphatic hydrocarbons, as butane, pentane, hexane, octane, and higher members of the paraffin series. In addition, usually it contains other hydrocarbons derived from coal, and "anti-knock" agents, as tetraethyl lead, aniline and nitrobenzene. Besides, it is noted that gasoline produced by the "cracking" process may contain up to 50% of unsaturated hydrocarbons and cycloparaffins.

CASES of chronic intoxication from gasoline vapors have been reported by some authors, as Koelsch, Dorendorff, Haden, Smithies, and others. Symptoms of chronic poisoning, after inhalation for a long time have been described as follows: headache, insomnia, abdominal pain, digestion impairment (anorexia, nausea, vomiting), mental impairment, memory loss, depression, sexual feebleness, paresthesia, mydriasis. There have been reported under-nutrition, frequently secondary anemia with leucocytosis and lymphocytosis, red corpuscles with basophilic granules, rhinitis, bronchitis, diarrhea, degenerative action on the kidneys and fatty infiltration of the liver, polyneuritis mainly in lower limbs. Skin contact with gasoline sometimes provokes dermatitis. Some other authors have not observed noteworthy effects from long exposure to gasoline vapors. Lazarew and co-workers, in women and in animals, have found no blood chemical or histologic alterations. Machle, by his protracted observations on more than 2300 refinery workers, has affirmed that chronic intoxication is rare, as only in a few workers exposed to highest vapor concentrations did he find under-nutrition, pallor, low hemoglobin, low red cell count, poor appetite, nausea, and nervousness.

THE present research is of particular interest as it refers to pure gasoline which always has been employed in the working process, as required in technical needs, composed exclusively of hydrocarbons of paraffin series distilling from 80° C to 130° C, in particular making use of distillates between 80° C and 100° C in the cold season and distillates between 100° C and 130° C in the warm season. This type of gasoline is completely free from any other compound or substance, and for this purpose it is analyzed with precision before application.

The working process for making the rubber sanitary items where the women of this examination are employed, is performed in the following way. In a closed container the solution of rubber in gasoline is prepared, mechanically, and from there it passes to the "dipping machine." This machine is like a tunnel with windows on a lateral wall. Inside, along the tunnel, is a rotatory mechanism, around which rectangular frames supporting fixed glass molds, shaped like the sanitary items to be made, are set periodically by the women. The glass molds dip into the rubber solution at the bottom of the tunnel, and then are removed and allowed to dry. The "dipping machine" is operated closed, and is provided with an internal exhaust system to recover the gasoline vapors. Through the windows of the machine, which are opened every half hour, the women take from the rotatory mechanism the frames with glass molds coated with the now dried rubber solution, and reset the frames to be dipped. During this operation, for a few minutes they are exposed considerably to gasoline vapors. In the same room they put the frames on a table, and, with the fingers, by an upwards friction movement on the base of the glass mold, shape the border of the rubber item. There they are exposed to vapors from gasoline still wetting the molds, but much less than in the previous operation. Afterwards, the frames are placed in warmed ovens to vulcanize the rubber. Finally, some further exposure arises in the process of removal of the formed rubber objects from the molds. At that stage some inert powder is applied, such as talc, starch, or lycopodium.

All considered, it may be believed that somewhat extensive exposure to gasoline vapors exists in at least three steps in these manufacturing activities. Some women workers have undergone this exposure daily for many years.

No complaints have arisen as to any serious

From the "Istituto di Patologia Medica," University of Bologna, Italy (Director: PROF. G. SOTGIU).

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damage. At the beginning of employment some workers observed a narcotic action early in the morning of the work period, but to this they quickly become enured. The absence of food favors the appearance of this drowsiness. No breakfast, or even a light one, has proved undesirable for new employees.

Clinical and laboratory examinations have revealed scant indications of any pathology. Dermatitis from gasoline, so often reported in the literature, has not been observed. The program of laboratory examinations, the results of which are tabulated, embraced the following items carried out through standard procedures:

Blood cromocytometric and cytologic examination: Hayem, Türk, Thomas-Zeiss, Sahli, May-Grunwald, Romanowsky-Giemsa, Monsen.

Azotemia: Ambard.

Alkali reserve: Van Slyke and Cullen.

Blood glutathione rate: Tunnicliffe.

Total blood proteins rate: Pulfrich.

Colloid state plasma tests: Ucko, MacLagan, Hanger, Wunderly-Wuhrmann.

COMMENT is limited to the more nearly significant laboratory findings:

Red Cell Count: Red counts are decreased in 14 cases, about one-third of the group; diminutions are moderate, not falling below 3.5 millions (Case 1), and more frequent among women with longer occupational periods. On the contrary, a mild increase in three cases only, with highest value of 5.290.00 (Case 24).

Hemoglobin: These values show many variations, as color index is decreased in 22 cases (56%) with values between 0.74 (Case 3) and 0.90 (Cases 5 and 11), the last one being considered subnormal, and is increased in six cases with a highest value of 1.08 (Case 29).

White Cell Count: Variations found in total number are of no significance, representing individual fluctuations, except in two cases of moderate leucopemia (Case 1: 3200, and Case 20: 3600) but worthy of note are: (1) a definite predominant lymphocytosis in 56% of the cases, with a number of lymphocytes above 30% and highest value of 62% in Case 32, 56% in Case 33, and 53% in Case 20. (2) A neutropenia appeared in over half the cases, and all cases showed in neutrophils toxic granules of Monsen type, found in some cases in a number of neutrophils smaller than normal, as in Case 11 showing 30 normal neutrophils and 27 neutrophils with toxic granules. (3) An eosinophilia present in

	Name	Age	Occupational period	Blood red cells count (in millions)	Hemoglobin %	Color index	Blood white cells count (in 1000's)	Lymphocytes	Monocytes	Neutrophils	Neutr. w Monsen toxic granules	Eosiniphiles	Basophiles		Azotemia	Alkali reserve	Blood glutathione rate	Total blood proteins rate	Colloid state plasma tests: Ucko	Mc Lagan	Hanger	Wunderly-Wuhrmann	Blood pressure
1.	M. F.	31	2 days	3.5	75	1.07	3.8	46	9	39	5	1	—		.41	62.3	27.5	6.98	—	1	1	—	105/60
2.	U. R.	29	15 days	4.2	86	1.00	6.0	42	8	39	11	—	—		.39	58.9	22.7	6.76	—	—	—	—	100/70
3.	P. G.	28	45 days	4.42	65	0.74	6.8	31	8	45	7	1	—		.31	71.4	25.8	7.20	—	—	—	—	130/80
4.	L. A.	32	2 mo.	4.62	75	0.81	7.2	26	4	55	15	—	—		.51	65.5	28.4	6.98	—	1	—	—	110/70
5.	V. S.	20	1 year	3.51	65	0.90	5.7	26	5	64	4	1	—		.39	63.4	25.0	7.15	—	—	—	—	130/90
6.	C. R.	16	1 year	4.67	78	0.83	4.4	41	8	29	14	6	2		.39	66.6	31.4	6.76	—	—	—	—	125/70
7.	G. A.	15	1 year	4.42	68	0.77	4.6	26	11	37	21	3	2		.41	59.7	26.7	7.41	—	1	—	—	115/75
8.	D. A.	16	1 year	4.9	77	0.78	8.8	44	5	41	8	—	1	Türk cell	.36	64.5	28.7	7.41	—	—	—	—	105/65
9.	C. O.	19	1 year	5.07	83	0.83	7.4	34	5	52	9	—	—		.41	62.0	28.4	7.15	—	—	—	—	110/70
10.	L. A.	30	1 year	4.67	87	0.94	8.1	23	8	48	20	1	—		.41	59.8	31.4	6.98	—	—	—	—	125/80
11.	P. L.	17	2 yrs.	4.39	78	0.90	5.8	34	9	30	27	—	1	Türk cell	.45	63.7	28.7	7.84	—	1	1	—	135/85
12.	R. I.	17	2 yrs.	5.07	87	0.87	4.4	35	10	49	5	1	—		.41	67.4	26.5	7.15	—	—	—	—	135/70
13.	O. F.	19	2 yrs.	3.98	67	0.85	6.1	39	8	46	5	2	—		.45	57.4	27.5	6.76	—	—	—	—	130/95
14.	L. T.	18	2 yrs.	4.45	75	0.84	4.9	38	11	33	15	2	1	Türk cell	.45	64.4	31.8	6.76	—	—	—	—	130/65
15.	M. L.	19	2 yrs.	4.2	88	1.04	9.6	34	12	48	5	1	—		.51	59.8	26.4	7.84	—	1	—	—	100/60
16.	F. G.	40	3 yrs.	3.65	66	0.91	5.2	24	10	47	18	1	—		.41	65.5	33.4	7.15	—	—	—	—	120/80
17.	P. M.	18	3 yrs.	4.25	58	0.79	5.0	24	10	51	14	1	—	target erythrocytes	.45	62.3	26.7	7.41	—	—	—	—	100/70
18.	G. E.	22	3 yrs.	4.22	68	0.80	8.4	40	5	54	1	1	—		.41	64.5	28.5	7.15	—	1	1	—	120/90
19.	L. L.	17	3 yrs.	4.41	67	0.76	5.1	26	8	52	11	3	—		.31	63.8	27.4	7.15	—	—	1	—	130/90
20.	C. M.	21	3 yrs.	4.61	85	0.92	3.6	53	8	27	9	3	—		.45	60.0	32.8	6.76	—	—	—	—	125/65
21.	N. A.	21	5 yrs.	4.63	72	0.78	5.6	37	8	47	7	1	—	target erythrocytes	.51	65.4	33.2	7.41	1	2	1	—	125/75
22.	M. B.	23	7 yrs.	3.7	79	1.06	4.6	31	8	37	22	1	1	Rieder cell	.45	61.4	28.9	6.55	—	—	—	—	145/90
23.	S. M.	32	8 yrs.	3.74	60	0.80	7.1	41	8	44	6	1	—		.41	59.5	27.6	7.41	—	—	—	—	125/75
24.	B. A.	37	8 yrs.	5.29	92	0.88	5.8	25	12	61	1	1	1	Türk cell	.39	58.7	24.9	7.15	—	—	—	—	125/80
25.	C. C.	24	9 yrs.	3.95	66	0.84	6.5	18	9	41	30	1	1	target erythrocytes	.41	67.3	33.1	7.41	—	—	—	—	110/75
26.	D. A.	29	10 yrs.	4.21	89	1.05	4.8	33	7	51	2	7	—		.43	67.0	31.8	7.15	—	—	—	—	120/80
27.	V. L.	27	11 yrs.	3.88	78	1.00	6.5	24	11	44	20	—	1		.41	59.4	28.5	6.55	—	—	—	—	115/80
28.	C. I.	28	12 yrs.	4.28	80	0.95	6.2	20	14	48	18	—	—		.51	67.8	31.9	7.41	—	1	1	—	140/80
29.	M. I.	33	13 yrs.	3.68	80	1.08	6.0	22	6	40	26	6	—		.45	65.9	34.0	7.41	—	—	—	—	110/70
30.	F. E.	32	15 yrs.	3.99	80	1.00	6.0	36	5	54	4	1	—		.51	55.9	27.4	7.15	—	—	—	—	145/90
31.	R. O.	42	16 yrs.	3.95	80	1.02	5.0	30	10	40	16	4	—		.41	59.6	31.8	6.55	—	—	—	—	150/105
32.	B. M.	38	16 yrs.	4.31	70	0.81	5.4	62	8	18	10	2	—		.49	67.4	25.9	7.15	—	—	—	—	145/90
33.	S. D.	40	18 yrs.	4.37	66	0.76	5.5	56	8	24	10	2	—	Türk cell	.55	60.7	31.7	7.15	—	—	—	—	130/70
34.	D. P.	53	19 yrs.	3.64	70	0.97	4.2	32	3	45	20	—	—		.41	59.2	30.6	6.55	—	—	—	—	160/95
35.	D. D.	38	20 yrs.	4.13	65	0.79	6.0	26	10	42	20	1	—		.51	67.9	25.4	6.76	—	1	—	—	135/95
36.	D. D.	43	24 yrs.	3.91	68	0.87	4.8	22	11	49	18	—	—		.39	63.9	22.2	7.15	—	1	2	—	145/85
37.	L. I.	52	24 yrs.	4.08	73	0.91	5.4	40	6	49	4	—	1	Türk cell	.41	58.9	27.7	7.41	—	—	—	—	155/90
38.	Z. I.	47	24 yrs.	3.53	70	1.00	5.4	20	9	60	11	—	—		.39	58.6	31.9	6.76	—	—	—	—	140/80
39.	G. I.	39	26 yrs.	4.11	70	0.76	5.0	27	8	56	6	3	—		.51	65.7	30.7	6.76	—	—	—	—	135/90

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four cases: Case 26, 7%; Cases 6 and 27, 6%; and Case 31, 4%.

Urine examination: Data of no particular significance and nothing pathologic in the sediments. Specific gravity in all cases never below 1012; in few cases traces of albumin were detected.

Azotemia: All values normal except case 33 with gr. 0.55%; that sole one is insignificant.

Alkali reserve: All data are within normal limits.

Blood glutathione rate: Accepted as normal values in persons at a constant diet, according to our research work in the matter, fluctuating between 22.3 mg. and 41.1 mg. per 100 cc. blood; all data in the group are normal.

Total blood proteins rate: Values show normal physiologic fluctuations with a tendency towards lower normal rates.

Colloid state plasma tests: To be considered negative; test of MacLagan to thymol, and of Hanger to cephalin and cholesterin, which we have found in our experience always more sensitive, show few cases slightly positive.

Blood pressure values: As resulting from many controls, are normal, according to age physiologic fluctuations.

CONCLUSIONS: Laboratory studies demonstrate deviations from the usual and expectable, some of which probably reflect a deleterious action of the gasoline hydrocarbons. The emphasis of this report is that this presumed damage is entirely below the clinical level, there being no subjective complaints in any instance. Some significance may reside in the disclosure of mild anemia, lymphocytosis, toxic granules in granulocytes, and in the fact that the women longest employed more often provide such findings. The authors find no warrant to claim that clinical chronic intoxication from gasoline hydrocarbons is detectable in this group of women workers.

SUMMARY: The authors have examined a group of 39 women employed, most of them for many years, in a factory making rubber sanitary items, and exposed to vapors of a pure gasoline in concentration not causing acute poisoning. Blood examinations revealed hypochromic anemia in a third of the women, and in all the presence of granulocytes with toxic granules of Monsen type, which were in some cases in a high percentage. Other examinations performed (urine, azotemia, alkali reserve, blood glutathione rate, total blood proteins rate, colloid state plasma tests) showed no modifications worthy of note. No skin lesions due to gasoline contact resulted. It is to be concluded that such an exposure to pure gasoline vapors, continued for a long time, is of no significance as to chronic clinical poisoning.

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The Non-Voter

IN ANCIENT Greece, if you were not a seeker after public office, you were an idiot. The men who preferred to live as private citizens became known as "idiotai." Their modest tastes, their lack of ambition, their indifference to the political life of that civic-minded day were set down to an inferiority of intellect. Today "idiot" implies the absence, usually congenital, of intellectual or reasoning powers. In the field of psychology the term is compared and contrasted with the terms "imbecile" and "moron," which are technical designations of the degree to which a person is mentally deficient, "idiot" designating a person of the lowest grade. It is probably in this sense that Millay uses the term in her lines: "April comes like an idiot, babbling and strewing flowers." An appreciation of the meaning of the term gives deep significance to Macbeth's characterization of life as "a tale told by an idiot, full of sound and fury, signifying nothing." Mark Twain has an interesting use of the term in "Following the Equator": "In the first place God made idiots. This was for practice. Then He made school boards."

—DAVID T. ARMSTRONG.

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The Value of Early Mobilization in the Treatment of Fractures

PRESTON A. WADE, M.D., F.A.C.S.
New York City

THE study of end results in the treatment of fractures indicates that the most important and the most common cause of disability is the impairment of joint function. This loss of function is usually the result of joint stiffness, although pain and faulty weight bearing may also play a part in the disability. Non-union is occasionally a cause of poor result, but in most instances the fractured bone heals and disability is the result of joint stiffness.

A fracture may heal with displacement and shortening, and even with angulation and rotation, and yet from an economic and functional point of view the result may be quite satisfactory. On the other hand, joint stiffness following a fracture will give a poor result with permanent disability in spite of good reduction and perfect healing.

Causes of Joint Stiffness

JOINT stiffness may be caused by: (1) injury to joint structures; (2) infection; or (3) functional inactivity and disuse.

INJURY TO JOINT STRUCTURES: It is obvious that fractures through articular surfaces of joints, particularly if there is deformity of the joint bearing surfaces, will cause a mechanical block to free motion of the joint. Also, injuries to the capsule, supporting ligaments and tendons will cause adhesions and scarring and contracture, resulting in joint stiffness.

In recent years there has been a greater emphasis on the meticulous replacement of displaced joint surfaces, the exploration of injured joints and removal of injured cartilage and menisci, and repair of torn ligaments; and as a result the treatment of joint trauma has been greatly improved. This improvement can be said to be due in great measure to the advance in open operative procedures and to the improvement in the metallurgic design of metals used in internal fixation. These newer methods have allowed the surgeon to extend the application of operative replacement of injured joints and permit early mobilization in many types of fractures that were previously doomed to disability when treated by old-fashioned methods.

Plates and screws made of the inert non-electrolytic metals of vitallium and 18-8 SMo stainless steel allow the surgeon to use internal fixation to insure maintenance of reduction of displaced fragments of a joint, and the fixation can often be depended upon to hold the fragments in position while allowing free motion of the joint during the healing period.

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INFECTION: Charnly states that "the commonest single cause of permanent joint stiffness is sepsis." The dense scars following infection leave an irreparable stiffness, and the surgeon must necessarily take every precaution to prevent infection in or around a joint or fracture. He must use every means in his power to control infection as rapidly and efficiently as possible, in order to prevent the scar tissue formation which so stubbornly resists treatment. The antibiotics are, of course, a most useful and effective means of preventing and controlling infection, but the surgeon must realize that even a minimum of sepsis may result in serious joint stiffness, and he must be aware of the fact that antibiotics may only retard the progress of infection, so that sepsis may not be recognized until late—too late on many occasions to prevent impairment of joint function.

Methods of fracture treatment involving transfixion by pins and wires may appear to be advantageous in allowing joint motion, but actually in many cases where even minor infection results, or where pins are inserted through muscles, more serious harm may be done by causing stiffness of the nearby joint. Even when properly applied, multiple pin fixation or external skeletal fixation is useful in only a few situations. Some open fractures of both bones of the leg may be best treated by this method, but, in my opinion, the method should be used only in this type of fracture and should not be applied to other fractures. Although it may be argued that the criticism of this method is the result of its misuse rather than the method itself, the fact that the method is so easily and widely abused and misued makes it even more vulnerable to criticism.

Continuous traction methods are often excellent means of reducing and maintaining position in unstable fractures, while allowing some motion of nearby joints. The choice of material for transfixion of bone in skeletal traction is often a debated subject. Should wires or pins be used? The advocates of wires state that the smaller opening in the skin and bone causes less necrosis, and infection is less common. Advocates of the Steinman nail state that the nail does not rotate on the bone as does the wire, and that the cutting power of the pin is less than that of the wire. I believe that either nail or wire may be used, but the more important consideration is the site of the insertion of the material.

If the pin is inserted too near a joint even a minor infection may result in severe disability. If a nail is inserted through muscles, pinning them to the bone, joint function may be even

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further impaired. If wires are placed through the supracondylar region of the femur the resulting contracture and adhesion formation may cause permanent stiffening of the knee joint. The pin tracts are apt to cause infection, and the muscles impaled by the wire become adherent and lose their function. In my opinion, the Kirschner wire is preferable if skeletal traction must be applied to the supracondylar region.

The tibial tubercle is much safer as a site for traction, since it is farther removed from the joint and from the site of fracture, and since no muscles are pierced by the nail or wire.

The os calcis may also be safely used as a site of skeletal traction in those cases where traction is necessary in fractures of the lower leg.

In fractures of the elbow, the olecranon may be safely used for skeletal traction, and often early motion can be instituted only by the use of this method in severely comminuted fractures not suitable for open operation.

FUNCTIONAL INACTIVITY AND DISUSE: In the latest edition of his book, Watson-Jones gives the following as the first principle of fracture treatment: "Every fracture must be treated by complete and continuous immobilization until union is sound." He states that the principle applies to every type of fracture, whether complicated or simple, infected or non-infected, recent or old, treated by manipulation or operation. He further states that complete and continuius immobilization of the fractured bone involves immobilization of the joints above and below the fracture, and that failure to obey this law of treatment is a source of delayed recovery and may be responsible for non-union.

Unfortunately, as a result of the literal interpretation of this commonly-quoted principle, most laymen and many surgeons believe that "a fracture means a plaster cast." We know, however, that there are many exceptions to this rule and that the literal interpretation will result in harmful prolonged immobilization of joints.

As a matter of fact, some fractures are better treated without any form of immobilization and give better results when motion of the injured limb is encouraged. The most striking example of this form of treatment is the so-called "hanging cast" treatment of fractures of the shaft of the humerus. In this, not only is no effort made to immobilize the fractured fragment, but, on the contrary, motion of the shoulder joint is encouraged, and motion at the fracture line is permitted as soon as pain will allow. Union results in most cases, and at the same time the most disturbing disability, loss of motion of the shoulder joint, is prevented by the simple and important expedient of immediate early active motion. Watson-Jones does not recommend the hanging cast, but he does recommend immediate shoulder motion and the use of the collar-and-cuff treatment of Sir Robert Jones. His objection to the hanging cast is that the unnecessary weight of the usual weighted cast provides more traction than is necessary, in spite of the fact that the traction is intermittent. Distraction is common as a result of the routine use of the heavy hanging plaster, and the same principle can be more successfully carried out by use of the collar-and-cuff hanging arm treatment with a minimum amount of local immobilization afforded by sugar tong or lateral splints. In any case, the fact remains that in this fracture, as in some others, immobilization of the fracture is not necessary to insure healing, and immobilization of the joints on either side of the fracture, the elbow and shoulder is not only unnecessary but undesirable and harmful.

Another false conception of fracture treatment is that all fractures need immobilization by some form of external splinting or internal fixation to prevent change of position of fracture fragments. As a matter of fact, many fractured fragments will not change position, in spite of movement of contiguous joints, and will proceed to heal promptly and perfectly, and all the while the contiguous joints are moving freely and normally; and in many instances in the lower extremity, the bones may be bearing weight as well.

In the case of impaction of one fragment into the other, as is well illustrated by the impacted fracture of the surgical neck of the humerus, the immobilization is achieved by the force of the trauma, which drives one fragment firmly into the other allowing early motion of the shoulder joint. There are many other fractures in which no form of immobilization is necessary, and in which early active motion of joints may be instituted immediately. This group of fractures includes fractures of the fibula, in which immobilization is achieved by the intact tibia; and fracture of the ribs, in which the fragments move together with respiration and are prevented from moving apart by the attached muscles. Compression fractures of the dorsal spine and some mild compression fractures of the lumbar spine need no immobilization. They are best treated by active motion and regular exercises. Many fractures need no immobilization because the amount of motion at the fracture site is not enough to prevent sound healing, even where nearby joints are mobilized. Fractures of phalanges, some carpal, metacarpal and metatarsal bones, fractures of pelvis, and fractures of clavicle and scapula are examples of injuries best treated by early mobilization, in spite of a limited degree of motion in the fracture site.

It is not necessary to immobilize both the joint above and the joint below the fracture in all cases. In some cases only one joint near a fracture must be immobilized to insure healing. The Colles' is a good example of the fracture which, theoretically, needs immobilization of both elbow and wrist joint, but for practical purposes immobilization of the wrist joint only is all that is usually necessary.

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It is obvious that the surgeon must interpret the general principles of fracture treatment in such a way as to insure the healing of the fracture without unnecessary and harmful immobilization of the joints about it.

Mobility and Exercise

WATSON-JONES' second principle of fracture treatment is: "Every joint which does not need to be immobilized must be exercised actively from the first day of injury."

There are no exceptions to this rule, and it is this principle that is so often disregarded in fracture treatment. Many fractures need to be immobilized continuously and completely for a prolonged period, and both contiguous joints need to be immobilized; and if during this period the patient is advised, encouraged and directed to move his body, exercise his muscles and move all his movable joints, the joints that are immobilized will regain their motion in the minimum time with the least permanent restriction.

If an injured limb is immobilized in plaster and no effort is made to encourage motion of all nearby muscles and joints, all of the factors that cause joint stiffness have an opportunity to cause permanent damage to the joints. The muscles become weakened and atrophied; some muscles become contracted, and their opposing group becomes stretched. The circulation is impaired, and edema develops with infiltration of soft parts and consequent adhesions about the joint. The uninjured joints, because of disuse and inactivity, also become stiff, so that, when the limb is released from the immobilizing apparatus, it is crippled and useless. At this point, the patient feels that any attempts at motion will be harmful and painful, and it is with the greatest difficulty that he can be encouraged to make use of the only valuable therapeutic measure at his command, namely, active motion. Attempts to force motion in these stiffened joints only cause further damage, further scarring, and restriction of motion, and when passive stretching is combined with heat and massage the vicious cycle is complete. Further edema and infiltration result, more stiffening takes place, and it is only because of the remarkable ability of the human joint to withstand abuse that many more permanent disabilities do not occur.

This unhappy sequence of events can, in large measure, be prevented by intelligent direction of the patient in the functional activity of all of his muscles and joints, and the functional activity of the injured limb insofar as the immobilizing apparatus will permit. The patient should be encouraged to use all of his muscles. If he is ambulatory he should be made to ambulate in spite of obvious difficulties. He should not be allowed to sit in a chair all day; he should be made to walk about. If he is confined to bed he should be given regular exercises so that he does not suffer the atrophies and weaknesses of disuse. He should be made to move all of the joints about an immobilized fracture because the muscle movement in an immobilized limb not only prevents circulatory stasis, but slight movements, no matter how minute, of the structures about an immobilized joint help to prevent "gluing" together of the soft parts. Furthermore, there is considerable evidence to indicate that motion of muscles about a fracture does, in fact, stimulate the formation of external callus and actually accelerates bone healing.

One of the earliest and strongest advocates of early functional activity is Lorenz Böhler, and in his clinic there is little emphasis on post-immobilization physiotherapy or special rehabilitation, because he believes that a patient should be able to walk out of his plaster with no disability if rehabilitation in plaster has been effectively carried out. Charnley states: "When a decision is made to remove a plaster, it is unwise to do so if the patient is not by this time already capable of good function in the plaster."

Treatment of fractures of the lower extremity in walking plaster, as advocated by Böhler, is an effective means of continuing the functional activity so essential to the prevention of joint disabilities. One may not agree with Böhler's theory that contact compression of fractured fragments promotes bone healing, but the weight bearing does allow use of the limb and hastens return to normal function after removal of plaster.

Early Mobilization

ANOTHER aphorism of fracture treatment is, "Never immobilize a joint one day longer than is absolutely necessary." In children and young adults one may expect a rapid return to joint function in the absence of infection, in spite of unnecessarily prolonged immobilization; but in adults such an error may lead to permanent disability. There is a mistaken conception that before a fracture can be released from immobilization the fracture line in the x-ray must be obliterated. Obviously, there are other factors involved in making this decision as to whether a fracture is healed. One is the clinical examination of the part, and evaluation of pain, tenderness and false motion. The other is the experience of the surgeon—which may prevent the immobilization of certain fractures longer than is necessary. The surgeon must know which fractures can be judged as healed by x-ray appearance alone, such as the neck of the femur and the carpal navicular. He must know that in other fractures the radiographic evidence of calcification of the callus does not appear until weeks after the fracture is clinically united, and that dependence on the x-ray reading only will lead to prolonged and harmful immobilization.

Early mobilization of joints may be achieved by the newer methods of internal fixation, which sometimes allow immediate mobilization of joints

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and even weight bearing as well. In the past few years, the use of newer non-electrolytic metals has enabled the surgeon to extend the application of internal fixation to many fractures previously treated by long periods of immobilization. The use of plates and screws in long bones will allow the mobilization of a limb in suspension during the period of healing. The newest and most striking example of the value of internal fixation in early joint motion is the use of the intramedullary nail in treatment of fractures of the shaft of the femur. In this method of treatment all of the requirements for the preservation of joint function are present. The patient is ambulatory almost immediately; there is no immobilization of any joint; weight bearing is allowed early, and functional activity may be instituted as soon as the patient awakens from his anesthetic. Böhler has recently published comparative figures of morbidity, disability and insurance company costs of a case treated by traction and one treated by the intramedullary nail. He found that in the case of a femoral fracture treated by closed reduction the hospitalization time was 172 days, as compared to 28 days in the case treated by the intramedullary nail; and the expense to the insurance company was 160 times as great. Böhler came to the conclusion that the state could save 100 million shillings a year if all cases of fractures of the femur were treated by open reduction. Furthermore, the joint motions in knee and ankle, in cases in which intramedullary nails are used, are greatly increased and more rapidly achieved by this method. Although the operation does carry a risk of infection, as well as other less serious complications, its use is a definite advance in fracture treatment and is entirely justifiable, particularly because of the reduction of morbidity and disability, as well as the economic advantage of decreased expense of treatment and disability.

Massage and Passive Motion

THE treatment of joints after removal of immobilizing apparatus is still misunderstood by many surgeons and by many physiotherapists. If proper care has been taken to follow the principles just outlined, then on removal of plaster there is a minimum of disability and treatment is rarely prolonged. Unfortunately, the patient who is in greatest need of good treatment, having had no instruction in exercise during immobilization, is often apt to receive the worst possible late treatment; heat, massage, and passive stretching of his joints. Böhler says, "Massage and passive motion cause the greatest possible harm to all fresh fractures and most old fractures." This is a truth with which many are not familiar and it is so important, I believe, that it should be put in big letters on a sign in every physiotherapy department. A companion aphorism might be, "The best physiotherapy is active motion."

If a stiffened joint is forcibly stretched, trauma is inflicted, the muscle and ligaments are torn, and in healing new scars are formed. There is further contraction, and the joint becomes stiffer after each manipulation. In a recent paper on elbow injuries there is an instructive picture entitled, "Position of Hands of Physiotherapist During Treatment of Stiff Elbow." The picture shows the hands of the technician folded, lying quietly in his lap. Watson-Jones says physiotherapy technicians should not be tempted to stretch elbows, so he does not refer these cases to his massage department. He undertakes the instruction of active motion himself.

Rehabilitation

IN THESE days there is such considerable emphasis on rehabilitation, that I believe there is a grave danger in the tendency to designate rehabilitation as a specialty or a phase or stage in the treatment of trauma. There is an impression in many industrial circles today that after a patient has had his fracture reduced, immobilized, and the plaster removed, he should then be transferred to a rehabilitation department, where, by certain mysterious treatment by a specialist, he is returned to normal. It is my contention that rehabilitation should begin the moment the patient is injured, and that rehabilitation represents all we do for a patient from the time he sustains his fracture until he returns to his work cured. There is no dividing line where rehabilitation begins after other treatment leaves off. If so, then the early treatment has not been satisfactory. A good fracture surgeon is the best rehabilitation expert the fracture patient can have, and the surgeon who needs a specialist in rehabilitation to achieve a good result in his patient is not a good fracture surgeon.

If, during the course of our treatment, we consider the patient and the muscles and joints about his fracture, and encourage him to mobilize his body, to move all of his joints that are not immobilized, to move his muscles within the immobilization apparatus in so far as it is possible, to walk on walking plaster, to move his fingers when the wrist is immobilized, to exercise his quadriceps regularly when the knee is immobilized, we can then expect that the recovery period will be greatly shortened, the patient will be more contented, the cost of treatment will be decreased, and the result will more nearly approach the ideal we wish to achieve, the complete return to normal joint function.

(898 Madison Ave.)

XUM

Compensation Laws in Relation to Dental and Jaw Injuries

LEONARD S. MORVAY, D.D.S., F.I.C.A.
Newark, New Jersey

THE NATIONAL survey covering compensation law in relation to dental and jaw injuries, which was assigned to me, is not completed. I am, therefore, obliged to confine most of my remarks to the New Jersey compensation act, to some of its many aspects and interpretations in reference to dental and jaw injuries, and to the part played by the industrial dentist or the private dental practitioner in carrying out the specifications of the law.

Importance of Records. Industrial dental records should be kept meticulously at all times, and should include such data as dates of examination, what the examination consisted of, notations on each cavity and its classification, the type of articulation, the roentgenographic findings, etc. A sketch of the anterior articulation is especially important so that the particular normal occlusion for the individual can be restored in the event of a maxillary fracture.

Oral Examination. Let us first consider the pre-employment dental examination. From the standpoint of the employee as to his health and longevity, and from that of industry economically as to his production ability, I am convinced of the importance of dental health in respect to lost man-hours. This conviction holds even though data concerning the actual man-hours lost due to dental disease *per se* are not available in unquestionable form so as to convince the skeptic industrialist.

It is necessary that pre-employment dental examination be routine, followed by periodic examinations at least every six months, so that the dental record may be kept up to date. If a dental or jaw industrial injury occurs in the weeks following the periodic examination, and the employee feels that one or more teeth have been injured solely as the result of industrial trauma, it may be possible to convince the employee, by actually showing the record to him, that the condition existed prior to the industrial accident. He may thus be brought to realize that the condition was present before his injury and, consequently, will not look for any redress. This available information imparted to the employee creates a better relationship with the employer, as the former finds in fairness that his first deductions concerning injury to his teeth were unfounded. Had no examination been made previously, the employee, following a dental examination immediately after trauma, would be under the misapprehension that the employer and the dentist were taking advantage of him, and that "the boss" was unwilling to have the dormant diseased dental condition repaired or even pay the compensation to which the employee thought himself entitled.

Consultation. The question arises as to whether it is fair to industry to have an employee who has had some teeth loosened or a jaw fractured consult a dentist of his own choice to receive emergency treatment. I do not think it is.

The average dental practitioner knows little or nothing relative to treating these dental industrial injuries when confronted with them, such as a fractured jaw or loose teeth or both, unless he is associated with a hospital that admits many patients with these conditions. Or he may not see fit to send a patient with an industrial dental or jaw injury to one who is experienced in handling these traumatic injuries. The inexperienced dentist may proceed to remove the traumatized loose teeth instead of immobilizing them for a week or 10 days in an attempt to retain the injured ones, which so often completely recover. Or in the case of fracture he may apply only a Barton bandage, providing little or no jaw immobility by this form of treatment.

If, as a result of inexperience with the fractured maxilla complete union does occur, the articulation may be so poor that permanent disability ensues unless refracturing is done. Try to obtain an injured workman's consent to refracturing his jaw so that it can be reset correctly. I doubt whether you will gain such consent in one of several dozen cases. The workman's attitude is "I can get on this way, so leave it as it is," but industry is asked to pay the fee for the permanent disability whether it is from the unnecessary sacrifice of natural teeth or the improper setting of the jaw fracture. In an attempt to protect its interests, industry starts litigation, retains experts who testify regarding the amount of permanent disability; lawyers prepare their briefs, and court calendars become crowded. This state of affairs is not a healthy one for the employee or the employer. For the former, teeth are sacrificed that could serve him possibly for years, and, as to the latter, industry is obliged to assume a big expense, not considering preliminary costs for the dentists, attorneys, investigators, adjusters, experts, office personnel, etc.

Send the patient following completion of emergency treatment to the private dental practitioner of his own choice for the postoperative treatment and restorations, but for the emergency service by all means refer the case to the industrial dentist or one experienced in managing such cases.

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Testimony and Compensation

FOLLOWING dental or jaw examination or treatment after industrial trauma, the industrial or attending dentist may be called to testify under oath in court. The use of terminology for court and jury should be within the comprehension of laymen. Such descriptions of dental conditions as periodontoclasia should be avoided; instead the term pyorrhea should be used. In place of the term periodontal membrane the dentist should say cushion of the tooth; instead of alveolus, jaw bone; instead of roentgenogram, x-ray. He may be placed under the necessity of producing all records, often in addition the study models showing occlusion, if available, and the roentgenogram pertinent to the case, and he may be asked to interpret them. Incidentally, the ideal method for recording occlusion in industry is to file articulated models.

At the time of final disposition of the case, the dentist may also be required to express a view regarding the severity of the injury, the length of temporary disability, the amount of permanent disability anticipated, the prognosis, etc.

When cases reach a referee or a judge, the dentist may be asked what type of dental prosthesis is indicated for the tooth sacrificed following the dental trauma, what the average fees are for previous treatment in the particular geographical locality, and the cost of the type of prosthesis recommended for dental rehabilitation.

In recommending a fee, the dentist must express an opinion in accord with the law. The compensation act may stipulate certain limitations. For instance, in New Jersey the act specifies that a petitioner is entitled to the type of restoration he himself would pay for. As an example, a petitioner having a take-home pay (this is what should be used as a standard) which is $75 a week, with a wife and four children to support, could not afford a fixed bridge of precious metal valued at $350, but would be constrained to accept a partial removable denture at an approximate fee of $125. Another petitioner earning the same salary but not married, and without dependents, could afford the fixed bridge, granting that both petitioners would use the partial payment plan were they themselves paying the dental fee for the restoration.

In New Jersey, the compensation act provides that an injured employee is entitled to four weeks' permanent award for every tooth sacrificed, plus the cost of its restoration. At the present time the rate is $30 per week, or $120 per tooth. The loss of six to eight anterior teeth plus their replacement may cost industry about $1000 in accordance with the New Jersey compensation act.

Assuming a workman has one-fourth of the crown of an upper central tooth completely cracked off, referees frequently allow one-fourth of four weeks' permanent disability plus the cost of the restoration. While one-fourth of the crown is lost it is not one-fourth of the entire tooth but rather only about one-eighth. Since in New Jersey the rate is now $30 per week permanent disability, and four weeks' permanent disability is allowed for each tooth sacrificed, the total sum would amount to $120 per tooth; one-fourth of the four weeks' permanent compensation would be $30. But actually it is only one-eighth of four weeks if we consider that the loss is one-eighth of the entire tooth. If the act were interpreted fairly, the cost should be really one-half of the $30, or $15. Of course, the cost of restoration, which might be a jacket crown at a fee of $60 or $75, would be additional, irrespective of how the permanent award is figured—whether by considering just the crown or the entire tooth.

If a petitioner should have six or eight natural teeth with one-fourth of the crown cracked off, it is evident that the interpretation of the act as to whether one-fourth or one-eighth of the entire tooth has been lost might result in an expense amounting to a substantial sum, which should be half of what is allowed at present.

My principle from the first time I was called upon to render an opinion as an expert—and I question this term, used so commonly in legal actions—has always been, and will always remain, to give a fair and honest opinion no matter where the chips may fall. I make it a point to see that the attending dentist is allowed just as fair a fee as I myself would demand were I rendering the service. A sincere employer or carrier should be given, and actually wants, an honest opinion regarding the percentage of disability and the reasonableness of the fee, so that he can be accurately guided in the adjudication of a claim. It is folly to attempt to minimize to the carrier the severity of an injury.

Aspects of Oral Disease and Fracture

MANIFESTATIONS resulting from occupational environment are often first noted in the oral cavity. The condition should be called to the attention of the industrial health staff, and records of the action taken by them to eliminate the hazard should also be kept. If then the dental exposure continues and legal action by the employee is instituted, these records can be submitted showing the date of discovery of the hazard and the date on which it was corrected. Thus some data would be available by which the dentist could determine whether the petitioner had been exposed to the hazard at the time it really existed.

The dentist should familiarize himself with the oral manifestations of metal poisoning, as he may be called upon to render an opinion when a petitioner shows any signs of this condition on the teeth, mucous membranes, gingival areas, the tongue, or the cheeks. The dentist may be asked to identify what the type of poisoning is, using the gingival discolorations to make the diagnosis.[1]

The question of aggravation of a dormant

chronic condition presents itself, and too often is left to the opinion of the referee in the case. Although he is not usually an expert in dentistry or the field of oral pathology and has had no special training to qualify him to determine whether a dormant dental condition has been aggravated, nevertheless he is frequently obliged to render a decision based on a technical dental question. In some areas expert testimony is not always available, and, if it is, the views may be conflicting. To place the responsibility on the referee is unfair not only to the petitioner but also to the referee, and the decision should be made only by trained professionals even if they have to be summoned from a distance.

For example, a petitioner establishes that he struck his teeth with a wooden plank, crowbar, engine crank, or other object, in performing the duties of his employment. As a result six of his upper anterior teeth were so loosened that he is now compelled to have them extracted. The industrial dentist is called upon to give his view as to whether the six upper front teeth are to be sacrificed because of the industrial trauma.

Upon clinical and roentgenographic study the dentist finds the six teeth in question extremely loose only because there is a gross loss of surrounding pathologic alveolar tissue, the result of chronic periodontal disease, which existed months and possibly years before the industrial trauma occurred. This is substantiated by referring to the pre-employment and periodical dental records. Now, unless a statement on the subject is on the industrial health record, who is to say whether just these six teeth were not as loose before the trauma and the condition was not recognized by the petitioner, or, on the other hand, that the teeth were fairly firm in their alveolar sockets previous to the alleged trauma? Assuming these teeth were partially stable before the industrial trauma was sustained, would they not become loosened if the petitioner happened to forget to control the normal force of mastication when biting on a hard piece of candy or a crust of bread? You know how time and again in your practice, civilian or military, you have been confronted at the dental chair by a patient having a history of chronic periodontoclasia who extends the palm of his hand on which is a natural tooth wrapped in a piece of tissue. The following story is related: "Doctor, all I did was to bite on a hard piece of candy, and look what happened!" This patient was truly surprised, even though there was no compensation award in question.

I hold the view that the vast majority of dental claims would never be started if the petitioners only realized the neglected condition of the teeth involved in industrial dental trauma.

Many referees allow full compensation for the loss of teeth diseased with "chronic pyorrhea"—as the court calls it—as long as they feel that the chronic condition has been aggravated even to the slightest degree. I do not think decisions based on slight aggravation of a severe chronic dental condition are equitable.

Concerning the ratings for fractured jaw, if the articulation has been restored to normal following treatment, and the occlusion is good, there should be no permanent award. Many referees, as a matter of routine, allow 5% of total compensation for a fractured jaw even though testimony is given that the jaw function is again normal. In New Jersey the total compensation is 500 weeks. Some hold that there must be a permanent disability following such injury, so they grab a figure "out of the air," as it were, and tag 5% to a completely recovered and well-functioning jaw. This amounts to $750. If the injury were rated just before the end of the two-year period (the Act provides dissatisfied petitioners may reopen their cases within that time), and if the case warranted an allowance of 5% permanent award, then I might understand the decision, but to make such an award when the injured part is rapidly returning to normal is beyond my comprehension.

Ratings

SEVERAL years ago I wrote the following: "The introduction of safety glass has increased the number of dental and jaw injuries in automobile accidents. The dental and jaw injuries result in dislodging or breaking teeth and dentures and fracturing jaws." I recommend a complete survey of the mouth in dental claims. Loss of teeth, depending upon their number and position, causes a reduction in the masticating surface, difficulty in chewing, prolongation of the time necessary to eat a meal, gastric disturbances, and, occasionally, loss of strength.

In New Jersey, facial scars are not taken into consideration in estimating awards. However, the Arizona and Nevada laws stipulate that compensable disfigurement shall include injury to, or loss of, teeth. In Colorado the employee is entitled to receive such dental treatment as will repair the effects of the injury, not exceeding $100. Rhode Island is newly required to furnish reasonable dental services when needed, including artificial teeth and dentures; and the employee may select his own dentist. Artificial replacements allowed by the Wyoming act include teeth. Mayet suggests 0 to 5% for the loss of one to three teeth. For the loss of one half the teeth with the possibility of prosthesis he allows 10%. Where prosthesis or replacement is impossible, 25% is allowed. For the loss of all the teeth with a replacement by prosthesis he allows 15%, and where a prosthesis is not feasible, he suggests 40 to 50%.

The following ratings of the U. S. Veterans' Bureau are of interest:

1. A rating of temporary partial 10% to 15% will be given where teeth are missing or are in the following conditions, shown to be from service origin:

(a) There must be two opposing molars or

bicuspids on each side in occlusion and 12 incisors.

(b) This rating will continue until the defect has been corrected.

(c) A diseased tooth, either from pyorrhea or periapical abscess, will be counted as a missing tooth.

(d) Permanent ratings will not be given for the loss of teeth unless it is impossible to replace them by suitable prosthesis.

2. A rating of temporary partial 10% will be given for the loss of one or more anterior teeth.

(a) Anterior teeth meaning from cuspid to cuspid, both upper and lower.

(b) This rating will continue until the defect is corrected.

3. A rating of temporary partial 10% will be given for pyorrhea alveolaris until the condition is corrected.

4. A rating of temporary partial 10% will be given for Vincent's stomatitis if the fusiform bacillus of Vincent is shown to be present. This rating will continue until the condition has been cured.

5. A rating of permanent partial 10% to 50% will be given for the loss of a part of or all the alveolar ridge of the superior or inferior maxilla or both.

6. A rating of permanent partial 50% in total disability will be given for structural or functional loss of the mandible between the angles.

The following states make special provisions for dental injuries:

Illinois—Employer must furnish artificial teeth.

Maine—Employer must furnish artificial teeth (once only).

Maryland—Employer must furnish artificial teeth. "If employer fails to repair or replace artificial limbs, eye, tooth, etc., within three days he must pay employee for his lost time after a three-day period."

New Mexico—Provides for artificial members, including teeth.

Rhode Island—Employer must furnish reasonable medical and dental care.

West Virginia—Employee is entitled to dental services (from State Fund).

Wyoming—Compensates for part of body which must be replaced by artificial means.[2]

These acts are amended from time to time and they cannot be accepted as prevailing at present, but they illustrate how varied the interpretations are according to only a few states.

Cases

THE question of determining the amount of permanent disability following the loss of teeth, as it affects the earning capacity of an employee, also presents a most interesting problem.

Summaries of just two of many actual cases are given. Owing to dental and jaw injuries both patients maintained that their incomes were materially reduced, so the dentists were called upon to render an opinion as to whether the petitioners' claims were well-founded.

CASE 1: Following upset of a fish peddler's wagon by an automobile the peddler sustained injury to the jaws and teeth; upper and lower dentures were constructed. He claimed that he could no longer blow his bugle on the street to attract his regular customers, and his income was thus materially reduced. The state attempted to rehabilitate him by having him taught a trade.

CASE 2: A shoemaker working in a repair shop was struck by a polishing wheel, and as a result all remaining natural teeth were sacrificed, so he was obliged to wear full upper and lower dentures. The petitioner claimed that no matter how hard he tried he could not hold the shoe nails in his mouth as he had done formerly, so his production was substantially reduced; limited piece work thus affected his earning capacity. The state attempted to have him taught a new trade at its Rehabilitation Clinic.

Conclusion

IN THE light of the preceding data it is the writer's opinion that the American Dental Association recommend to its component state societies to give immediate consideration to the compensation acts of their respective states. If necessary they should frame amendments to their act so that the dental provisions, if they exist at all, be clarified to provide adequate specifications relative to dental and jaw injuries.

Summary

INDUSTRIAL dental records including pertinent data should be kept at all times.

Pre-employment as well as subsequent periodic examinations are important in establishing whether one or more teeth have been injured solely as the result of industrial dental trauma.

An employee who has sustained an industrial dental or jaw injury during employment should be sent for emergency treatment to an industrial dentist or one experienced in such cases.

Records, study models showing occlusion, roentgenograms, etc., pertinent to a case aid the industrial dentist in reaching an opinion in regard to severity of the injury, the length of temporary disability, and the amount of permanent disability. He must be prepared to give information regarding fees for treatment and costs of restoration of lost teeth due to industrial accident so that an equitable award results.

The dentist should familiarize himself with the oral manifestations of diseases due to occupational exposure in order to render a just opinion concerning the causative agent.

(30 Central Ave.)

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A Follow-Up Survey of Fitness for Duty Examinations Among Federal Employees

TRACY LEVY, M.D., ELIZABETH G. PRITCHARD, EDWARD H. LEVINE, M.D., DOROTHY R. KREITL, M.D., and WILLIAM F. SIMPSON, JR., M.D.
Washington, D.C.

APPLICANTS for Federal employment under the Civil Service System are required to undergo a pre-employment medical examination. During the course of his employment, however, the Civil Service employee is not required to submit to medical examination for personnel purposes except under certain specified conditions. If he becomes injured on the job or requests retirement for disability, he must submit to such examinations. In addition, if he loses efficiency on the job and his personnel officer or supervisor is of the opinion that some illness or health defect is related to the loss of efficiency, the employee may be requested to accept a Federal Employee Fitness (FEF) examination, commonly referred to as a "Fitness for Duty" examination. In this connection, employees whose jobs expose them to hazardous conditions or toxic materials may also be referred for periodic medical appraisals.

The purpose of such examinations is to provide a sound medical basis for personnel action in each individual case. The medical findings may indicate any one of a number of effective methods for disposition of the case, or a combination of methods. These may include transfer to a job better suited to the individual's capacities, referral for diagnosis and treatment of a disease or correction of a defect, or retirement for disability. The medical findings will often reveal no medical basis for loss of efficiency. In these cases, having ruled out illness or defect as a factor in the problem, personnel officers and supervisors are able to select and apply the appropriate personnel practices without undue delay.

The Conduct of FEF Examinations

EMPLOYEES are referred for FEF examinations to the Examination Clinic of the U.S. Public Health Service Outpatient Clinic by the personnel office of their agency, either direct or through the agency's health unit. Each referral must be in the form of a letter giving the reason for the examination and providing other pertinent information. In each case, the referring officer must state that the employee has been told the purpose of the examination.

The Outpatient Clinic has devised a standard outline for the referral letter and has distributed it to Federal agencies in the Washington area which require such service. This type of referral letter affords the examining physician sufficient information to insure an adequate examination and to guide his final appraisal of the employee's capacities in relation to the job and the work situation. The outline requires the following information in that order:

1. Identification of the employee.
2. Narrative summary of the tasks the employee is expected to perform.
3. Summary of employer's opinion as to inadequate performance.
4. Reasons for suspecting that inadequate performance may be related to illness or defect.
5. Statement that employee has been informed of the purpose of the examination.

Each examinee is required to fill out the Standard Form 89 (History), which is a check list of personal health experiences, including items related to the family history. Using this information as a guide, the physician can obtain a complete medical history from the examinee.

An extensive physical examination is then made. Urinalysis, hematocrit, serological test for syphilis, and 70 mm. photofluorogram of the chest are performed routinely. A Papanicoloaou test is made in connection with the routine pelvic examination of females.

In the Outpatient Clinic, facilities are available for special x-ray examinations, including fluoroscopy, as well as for special laboratory studies such as blood chemistry and liver function study. Medical consultation service is also available in all specialties. These facilities and services are used as indicated. The results of all tests and examinations are coordinated and reviewed by the examining physician, who then reaches a decision as to the health status of the examinee and makes recommendations to the referring officer for disposition of the case.

The examining physician uses the Health Qualification Placement Record (Standard Form 90) in making his report to the referring agency (Chart I). The Inter-Agency Committee on Medical Records, under the Chairmanship of Dr. Harold Dorn (of the U.S. Public Health Service) devised this form in 1948 as a part of its reporting system in connection with the pre-employment medical examination of applicants for Federal employment. Its purpose is to reduce to uniform, simple terms the technical and medical terminology related to job descriptions, environmental and functional factors in the physical requirements of jobs, and the physical capacities of

ELIZABETH G. PRITCHARD is Special Assistant to the Surgeon General, U.S. Public Health Service.
WILLIAM F. SIMPSON, JR., M.D., and DOROTHY R. KREITL, M.D., Examination Clinic, United States Public Health Service Outpatient Clinic, Washington, D.C.
EDWARD H. LEVINE, M.D., Veterans Administration Hospital.

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CHART I.

POSITION OF HEALTH QUALIFICATION PLACEMENT RECORD (STANDARD FORM 90) TO BE COMPLETED BY THE EXAMINING PHYSICIAN

INSTRUCTIONS: The items circled below indicate the physical requirements of the position for which this individual is being considered. Indicate the individual's physical capacities for this position by placing an X in the appropriate column opposite the numbers encircled. If the individual has any other physical limitations relating to physical requirements not encircled or not covered by this form, indicate these under "Remarks" on the reverse side. Whenever PARTIAL capacity has been indicated, explain under "Remarks," giving specific quantities.

PHYSICAL REQUIREMENTS—ENVIRONMENTAL FACTORS

	Capacity		
	Full	Partial	None
1. Outside			
2. Outside and inside			
3. Excessive heat			
4. Excessive cold			
5. Excessive humidity			

The Form continues the list of Environmental Factors as follows:

Excessive dampness or chilling
Dry atmospheric conditions
Excessive noise, intermittent
Constant noise
Dust
Silica, asbestos, etc.
Fumes, smoke, or gases
Solvents (*Degreasing agents*)
Greases and oils
Radiant energy
Electrical energy
Slippery or uneven walking surfaces
Working around machinery with moving parts
Moving objects or vehicles
Working on ladders or scaffolding
Working below ground
Unusual fatigue factors (*Specify*)
Working with hands in water
Explosives
Vibration
Working closely with others
Works alone
Protracted or irregular hours of work
Special factors (*Specify*)
Heavy lifting, 45 pounds and over
Moderate lifting, 15-44 pounds
Light lifting, under 15 pounds
Heaving carrying, 45 pounds and over
Moderate carrying, 15-44 pounds
Light carrying, under 15 pounds
Straight pulling (hours)
Pulling, hand over hand (hours)
Pushing (hours)
Reaching above shoulder
Use of fingers
Both hands required
Walking (hours)
Standing (hours)
Crawling (hours)
Kneeling (hours)
Repeated bending (hours)
Climbing, legs only (hours)
Climbing, use of legs and arms
Both legs required
Operation of crane, truck, tug, tractor or motor vehicle
Ability for rapid mental and muscular coordination simultaneously
Ability to use and desirability of using firearms
Near vision correctible at 13 to 16 inches to *Jaeger 1 to 4*
Far vision correctible to 20/20 to 20/40
Far vision correctible to 20/50 to 20/100
Specific visual requirement (*Specify*)
Both eyes required
Depth perception
Ability to distinguish basic colors
Ability to distinguish shades of colors
Hearing (*Aid permitted*)
Hearing without aid
Specific hearing requirements (*Specify*)

individuals to meet those requirements. Thus, "Form 90" becomes a common working tool between the personnel officer or supervisor and the examining physician.

Since referrals for FEF examinations are made for the most part by non-medical officials, and since the value of the medical examination depends to a large extent upon the employer's interpretation of the findings, the use of the Health Qualification Placement Record is particularly valuable. Often the report is supplemented by conferences between the examining physician and the personnel officer. Medical findings and diagnoses are not recorded on the Health Qualification Placement Record; but there is expressed, in terms of function, what the examinee can or cannot do, on the basis of the medical findings.

The examining physician also writes his recommendations on the Health Qualification Placement Record. There are four classifications:

1. *Medically fit for duty.* This means that the examinee is physically able to meet the demands of his current job without endangering his life or health or that of his co-workers. In cases where a disease or defect exists but, in the opinion of the examining physician, it has no relation to loss of efficiency, a "medically fit for duty" recommendation is made. Disposition of the case must then be made through other appropriate personnel management procedures, rather than through retirement for disability or termination of employment for medical reasons.

2. *Medically fit for duty contingent on modification of the demands of the job.* This means that if the employee is to perform his duties satisfactorily, one or more aspects of the job must be modified because of an existing disability. If these job requirements can be modified or removed or if the employee can be placed in a different type of work where these requirements do not exist, his performance should be satisfactory.

3. *Medically fit for duty contingent on medical treatment.* This means that a disease or defect exists which is related to the loss of efficiency, but that if the employee obtains adequate medical care there is every reason to believe that he will be able to perform as efficiently as he did prior to his illness.

4. *Medically unfit for duty.* This means that consideration has been given to every possible opportunity for job modification or restorative treatment and that neither, in the opinion of the examiner, will make it possible for the employee to perform adequately in any job. Essentially, this is equivalent to recommending retirement of the employee for disability.

Analysis of 100 FEF Examination Records

THE FEF examination procedure has been in effect for nearly 30 years, but, so far as the authors have been able to learn, there has never been a study to determine the results of the procedure. For a number of years, most of the FEF examinations in the Washington area have been conducted by the U.S. Public Health Serv-

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ice Outpatient Clinic which is located in the downtown section of Washington, D.C. Since the Clinic retains a complete record of referral, medical examination and recommendations on each FEF examination, it seemed that a comparison of these data with information on subsequent personnel actions and final dispositions of the cases might be valuable.

The pressure of work in the Examination Clinic does not permit much in the way of follow-up of FEF examinations to determine the adequacy of the recommendations and the extent to which they have been implemented. The present study was planned to obtain such information from the referring agencies on 100 FEF examinees and to analyze the combined personnel and medical data.

A total of 100 FEF examination records were selected at random from our files covering the 13-month period, December 1, 1950, through December 31, 1951. This group constituted 54% of the FEF examinations conducted by the Outpatient Clinic during the same period. Review of these records revealed that five of the 100 individuals were referred for periodic medical examinations related to specific occupational exposures and not because of loss of efficiency. These five records were therefore excluded from the follow-up and analysis.

The referring agency was then queried as to the outcome of each of the 95 cases selected for review and analysis. The requests were made in February, 1952, or from two to 13 months after the examination. The information requested included: (1) the examinee's employment status at the time of the study; (2) if employed, his efficiency in terms of adjustment to the job; (3) whether recommended job modifications had been made; (4) whether employee had or had not obtained recommended medical care.

Because of the close contacts between the Examination Clinic and the personnel officers or physicians of the referring agencies, it was possible to obtain this information on all 95 cases. In many instances, the referring agency reported personnel actions—such as job modification or changes in the supervisory situation—which had not been recommended by the Examination Clinic but had resulted in satisfactory adjustment of the examinee.

The ages of the examinees in our study group ranged from 19 to 79 years, with a mean of 45.6 years. The mean age of all Civil Service employees in 1947 was 40.6 years, and there is no reason to assume a marked change. The higher mean age of the study group is probably accounted for by the fact that a larger proportion of persons referred for FEF examinations will be nearing retirement either for age or for length of service.

The sex distribution of our 95 examinees was not comparable with that among Civil Service employees in the Washington area. As of December, 1951, the ratio was 5.5 males to 4.5 females, whereas in our study group, the ratio was 6.8 males to 3.2 females, A recent series of 4,500 pre-employment examinations for Federal employment showed a reverse order, with 60% females and 40% men.

TABLE I.
DIAGNOSIS OF 95 EXAMINEES ACCORDING TO PHYSICIANS' EVALUATION OF FITNESS FOR DUTY

Diagnosis	Medically Fit	Medically Fit With Job Modification	Medically Fit With Medical Care	Medically Fit Contingent on Combined Job Modification	Medically Unfit	Total
Total Cases	35	12	15	3	30	95
Neuropsychiatric disorders	21	4	5	0	11	41
Cardiovascular diseases	1	2	3	1	12	19
No disease found	5	0	0	0	0	5
Bone and joint involvement	4	3	1	1	3	12
Metabolic and blood forming diseases	1	2	2	0	2	7
Syphilis and syphilitic involvement	0	1	2	0	1	4
Miscellaneous*	3	0	2	1	1	7

*See Appendix Table F

Medical Findings

TABLE I shows the numbers of examinees in each of seven major diagnostic categories according to the evaluation as to fitness for duty by the examining physicians. Table II shows the numbers of specific diagnoses in each of six major disease categories, together with the secondary diagnoses encountered in these groups. Although the secondary diagnoses are associated diseases or changes and are not considered to be the disabling condition, these data reveal the value of medical examination, including adequate x-ray, laboratory, and consultation services in discovering the multiple diseases and defects that may be present in adults of working age.

Neuropsychiatric disorders were diagnosed in 41 of the individuals, and cardiovascular diseases in another 19. These two health problems accounted for 64% of the referrals for FEF examination, and for 76% of the 30 "medically unfit for duty" recommendations.

Analysis of the 65 "medically fit" cases reveals some interesting ratios. Only five individuals were found without any pathology, hence 91% of the group appraised as "medically fit" with and without recommendations for job modification or treatment, was diagnosed as having some disease, disorder, or defect. Actually, only 35 individuals were judged "medically fit for duty" without any recommendation for adjustments on the job or medical care, but 30 of this group had been diagnosed as having some disorder.

It is especially striking that 50% of the examinees diagnosed as having a neuropsychiatric disorder were evaluated as medically fit for duty without any recommendation for job modification or medical care. An explanation for

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TABLE II.
NEUROPSYCHIATRIC DISORDERS

Diagnosis	No. of Cases	Male	Female	White	Colored
Anxiety reaction	11	8	3	7	4
Psychoneurosis	11	7	4	7	4
Schizophrenia	6	4	2	6	0
Situational stress	5	3	2	2	3
Psychopathic personality	2	2			2
Epilepsy	1		1		1
Cerebral atrophy	1		1	1	
Involutional melancholia	2	1	1	1	1
Post Traumatic psychosis	1	1		1	
Secondary Diagnoses:					
Hypertension	6	4	2	4	2
Peptic ulcer	2*	1	1	1	1
Tuberculosis, inactive	1	1			1
Allergy	1		1	1	
Nerve deafness	2	1	1	2	
CARDIOVASCULAR DISEASE					
Hypertensive cardiovascular disease	7	5	2	3	4
Arteriosclerotic cardiac vascular disease	5	5	0	4	1
Combined hypertensive and arteriosclerotic	4	3	1	2	2
Hypertensive and/or arteriosclerotic cerebral vascular disease	5	4	1	3	2
Secondary Diagnoses:					
Diabetes mellitus	2	2		1	1
Hernia, inguinal	2	2		1	1
Arthritis, hypertrophic	2		2	1	1
Cirrhosis, hepatic, advanced	1	1		1	
Avitaminosis	1	1			1
Anxiety reaction	1	1			1
Anemia, secondary	1		1	1	
SYPHILIS					
Latent	2	2		2	
CNS (Tabes)	1	1			1
Cardiovascular (aneurism)	1	1			1
BONE AND JOINT DISEASE					
Fracture (healed)*	3	2	1	2	1
Arthritis, rheumatoid	2	2			2
Arthritis, osteo	1	1		1	2
Arthritis, traumatic	3	2	1	1	2
Pes planus, symptomatic	2	2			2
Hallux valgus, bilateral	1	1		1	
Secondary Diagnoses:					
Dermatitis, hypostatic	1	1		1	
Ulcer, duodenal	1	1		1	
Deafness	1	1		1	
Cervical rib, asymptomatic	1	1			1
METABOLIC OR BLOOD-FORMING DISEASES					
Cirrhosis of liver	2	2		1	1
Anemia, hypochromic	3		3	2	1
Diabetes mellitus	1	1			1
Secondary Diagnoses:					
Psychoneurosis	1	1			1
Uterine fibroid	1		1		1
Diabetes mellitus*	1	1			1
MISCELLANEOUS DISEASES					
Hyperthyroidism	1		1	1	
Parkinsonism	1	1		1	
Carcinoma (prostatic)	1	1			1
Nerve deafness	1		1	1	
Tonsillitis, chronic, recurrent	1	1			1
Varicose veins, legs	1		1	1	
Postoperative evaluation	1	1			1
Secondary Diagnoses:					
Hypertensive vascular disease	1	1		1	
Hypertensive and arteriosclerotic vascular disease	1	1			1

*One case had a peptic ulcer, hypertension, and a severe psychoneurosis.

*To determine ability to return to full duties.

*In one of the cirrhosis of the liver cases.

this may be found in the statutory requirement that the FEF examination be conducted with respect to the physical demands of a particular job. Frequently, the presenting problem is one of inter-personal relationships which can be handled by personnel actions not involving medical adjudication. Just as frequently, the problem may be one involving off-the-job situations and hence is not the official responsibility of employing agencies or the examining physician. Informal discussions with personnel officers or physicians in the health unit of a referring agency, however, have often resulted in changes in the work situation or effective personnel counseling which has helped the employee to adjust and thus to do a better job. In many of these cases the disorder is of the mildest degree and is a response to a transitory situation. Often continuation on the job is the most effective therapy. Many mild neuropsychiatric disorders are diagnosed when employees fear some serious chronic disease, such as cancer, diabetes, etc. The thorough medical examination and assurance that no organic disease is present frequently result in complete relief of the neuropsychiatric symptoms.

Employment Status

TABLE III shows the employment status of the 95 examinees, reported by the personnel officers, according to the physicians' evaluation. Of the 30 examinees found not fit for duty, 20 had been retired at the time of the study, five had resigned, four had been re-assigned to other duties and were making a satisfactory adjustment, and one had died.

It is a cause for real gratification that four of these employees with serious disabilities were enabled to remain in employment. Apparently, the personnel officers had used the FEF examination as a basis for searching out suitable jobs and applying selective placement methods.

Among the 65 employees considered medically fit for duty, 50 were still employed by the refer-

TABLE III.
EMPLOYMENT STATUS OF 95 EXAMINEES ACCORDING TO PHYSICIANS' EVALUATION AT TIME OF EXAMINATION

Employment Status	Medically Fit	Medically Fit With Job Modification	Medically Fit With Medical Care	Medically Fit Contingent on Combined Job Modification and Medical Care	Medically Unfit for Duty	Total
Total Cases	35	12	15	3	30	95
Still Employed	28	8	12	2	4	54
Satisfactory Adjustment	22	7	7	1	4	41
Unsatisfactory Adjustment	6	1	4			11
Retired			1	1	20	22
Resigned	5	1			5	11
Other Disposition*	2	3	2		1	8
Unclassified**			1	1		2

*Died, appointment terminated, or transferred to another agency.

**No report as to adjustment.

ring agencies, six had resigned, two had retired, and seven had had their appointments terminated. In this last group, one could not qualify for another position available in the agency although job modification had been recommended, one held only a temporary appointment, and the remaining four had their jobs terminated on grounds other than medical.

Forty-one of the 54 examinees still employed were making satisfactory adjustments, and 11 were not. Six of the latter group had been judged medically fit for duty without recommendations for job modification or medical treatment, and four of them had been returned to their agencies with a recommendation that they were medically fit, contingent on the employees' obtaining medical treatment with one contingent on job modification. The recommended change in job had been made but reports do not indicate whether the four employees followed the recommendation to obtain medical care.

It has long since been demonstrated that high absenteeism and labor turnover rates are costly, as also are premature and delayed retirements for disability. Less is known of the effects upon efficiency of improper placement or lack of medical treatment of employees who have developed non-occupational diseases and defects while employed. Although not apparently disabling, these diseases and defects undoubtedly hamper efficiency, not only of the affected employees, but also of their co-workers.

Measures that will keep employees on the job and functioning efficiently are of the first importance in effective personnel administration. In the present period of mobilization and manpower shortages, it is all the more necessary to conserve productive manpower. Since 54 of the 95 employees whose cases were reviewed in this study were still on the job and 41 of these were making satisfactory adjustments after their examination, it appears that the FEF examination is a valuable procedure in Federal personnel management.

It should be recognized that referral for FEF examination is usually a procedure of last resort. Efficiency on the job has suffered and at least a suspicion of disease or disorder as a contributory factor has been entertained. Hence a high percentage of individuals with one or more diseases or defects is to be expected among employees who undergo the thorough medical examinations provided by the U.S. Public Health Service Outpatient Clinic. The reasons personnel officers give for referral do not lend themselves to tabulation, but it is significant that 26 of the examinees were referred because of excessive sick leave, 24 for behavior problems or suspected neuropsychiatric disorder, and 18 because they had a poor work record or were unable to perform the duties assigned to them.

Few Federal agencies maintain an industrial or occupational health service for their Civil Service employees, comparable with the services operated by most large industries. Several maintain employee health units and some of these are in charge of a physician. When FEF examinees are referred through a health unit, some medical judgment has already been brought to bear upon the problem, and more frequently the reason for referral is to determine whether a specific pathologic condition renders the employee unfit for duty.

For example, 25 of our cases were referred through three health unit physicians, and nine of these gave a specific diagnosis as the reason for referral. In contrast, only three of the 70 cases referred by personnel officers gave information on a specific diagnosis.

It has often been suggested that personnel officers and supervisors tend to utilize the FEF examination as a means for solving difficult problems which actually have no medical basis. Our figures do not bear out this supposition. Only five of the examinees were found to have no significant pathology; 90 had one or more diseases, defects, or disorders of varying severity. Moreover, while only four of the examinees were referred for the specific purpose of determining eligibility for retirement, the examining physician recommended that 30 individuals were medically unfit for duty and 20 of these were actually retired for disability.

The facts that 41 individuals in our series of 95 cases were functioning satisfactorily and that 36 of these had been diagnosed as having disabling conditions of varying severity, demonstrate the value of close cooperation between examining physicians and personnel administrators.

Undoubtedly, without the FEF examination and follow-up of recommendations in their agencies, many of these individuals would have had their employment terminated to their own detriment and that of the Federal government.

(Tracy Levy, M.D., U.S. Public Health Hospital, Staten Island, New York.)

[The authors wish to express their appreciation to DR. C. K. HIMMELSBACH (M.O.C. USPHS Outpatient Clinic, Washington, D.C.) for his help and ideas in the writing of this article, and to MRS. LOUISE BLAINE for her part in its preparation.]

XUM

Skin Hazards in Railroad Roundhouses and Machine Shops

LOUIS SCHWARTZ, M.D.
Washington, D. C.

PRIOR to the advent of the Diesel type of locomotive there was only an occasional case of occupational dermatitis reported among workers in railroad machine shops and roundhouses. But as railroads began to use the Diesels the number of cases of occupational dermatitis increased, so that now it has become a problem. This paper is the result of the investigations in the machine shops and roundhouses of two railroads.

Reports by Other Investigators

EARLY in 1949, Birmingham, of the U.S.P.H.S., made an inspection of the terminal roundhouses of one railroad where dermatitis was occurring among men servicing Diesel engines. He reported partially as follows: "Diesel locomotives undergo an oil change about every 40,000 miles. Their lubricating oil is a heavy-duty lubricant which may contain such additives as detergent, dispersive, anti-oxidant and anti-foaming compounds. The oil is usually of high paraffin content. When the oil has been used and dropped from the crankcase, there is literally no contact made during the process. However, some of the servicing crews clean the air boxes which surround the Diesel cylinders to form a cooling effect of air. After several thousand miles of travel, the air boxes become dirty by virtue of sand, soot, and various types of grit which get through the filters. This residual matter in the air boxes is of almost abrasive constituency. Before new oil is put into the Diesel locomotive, the entire cylinder heads are bathed with fuel oil which is a light fraction mineral oil. This is sprayed over the cylinder head as a cleansing solvent and drains into the crankcase from whence it is dropped. Workers using this spray would be subject to considerable contact from the spray mist unless protective clothing or ointments were worn. Being a mineral oil, it has the same property of defatting and irritating the skin as does any light fraction solvent."

He recommended adequate ventilation while cleaning air boxes and locomotives, wearing rubber gloves and protective sleeves for workers at this job and for workers cleaning cylinder heads with light oil fractions. Where gloves and sleeves are impracticable he recommended protective ointments of the oil insoluble type.

Campbell, of the Iowa State Labor Commission, made an investigation of dermatitis hazards in the Diesel repair shop of one of the railroads. He observed that men working on the engine units are exposed to radiator cooling fluid, oil, Stoddard solvent and Diesel fuel oil. He noted that while the cooling system was emptied before disassembling operations were started, appreciable amounts of cooling fluid drained from the radiators while they were being removed from the engines and dropped on the hands, arms and clothes of the workers. The cooling fluid contained an anti-corrosion compound, Nalco No. 38, which is a mixture of chromates, di-chromates and strong alkalis, which are primary skin irritants in strong concentrations and can produce sensitization even in dilute solutions on repeated exposures. He believed the dermatitis was due chiefly to this anti-rust compound, because he was told that workers exposed only to oils and solvents did not develop dermatitis. Campbell makes excellent recommendations for prevention. Some of these are:

1. That all containers of water conditioning chemicals bear a label as follows: "CAUTION—Contains chromate compounds. Keep container closed. Avoid breathing dust or solution spray. Avoid contact with skin or eyes. Do not take internally. In case of contact immediately flush skin or eyes with plenty of water."

2. That workers should be educated not to use gasoline, turpentine, fat solvents, strong alkali solutions, paint thinner, abrasive soaps, as skin cleansers, and that a safe industrial cleanser containing a superfatted toilet soap, wetting agent and a soft organic scrubber be used. Workers having dry, cracked, inflamed skins, or whom soap irritates, should use a sulphonated oil.

3. That a skin lotion or cream be used after washing to keep the skin soft and strong and its resistance at a high level.

4. That protective creams be used on the hands and arms, since the operations do not allow the use of gloves, etc., and that men disassembling engines and engine parts be furnished with a protective cream against alkalis and caustics.

Other investigators have reported dermatitis among Diesel repair workers proved by patch tests to be due to hypersensitivity to the anti-rust compound in the cooling fluid.

THE investigations reported here were made in three machine shops and three roundhouses employing about 1300 men.

MACHINE SHOP INSPECTION: Here the cleaning and machining operations of the disassembled parts takes place. Carbon and grease are cleaned off the disassembled motor parts by immersing them in a large tank containing a hot strong solution of a stripper compound which is highly alkaline. In two machine shops a solution of a compound known as K-5 Stripper was used, and in the other machine shop a hot lye bath was used to remove carbon and grease. After the parts are removed from the stripper

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PRINCIPAL SKIN HAZARDS
RAILROAD MACHINE SHOPS AND ROUNDHOUSES
(From Chart prepared by Charles S. Gravatt)

	Alkalis Caustics	Carbon Tet. Trichlorethyl	Chromates Cooling Fluid	Crankcase Oil	Cutting Oils	Diesel Fuel Oil	Petroleum Solvents	Acids and Fluxes
Machinists and helpers	x	x	x	x	x	x	x	
Electricians and helpers		x					x	x
Sheet metal workers and helpers			x				x	x
Boiler makers and helpers	x						x	x
Coppersmiths and helpers	x	x		x		x	x	x
Locomotive painters							x	
Vat attendants	x						x	
Welders and helpers		x	x				x	x
Laborers	x	x	x	x	x	x	x	
Diesel disassemblers	x		x	x		x	x	

tank they are steamed off with a special steam cleaner solution. These hot stripper and lye solutions are skin irritants and may cause dermatitis on the workers splashed with them and exposed to the mist coming off the hot solution in the tank as well as from the steam spray.

Workers engaged on the hot stripper solution tank and those steam cleaning parts should be provided with and instructed to use rubber gauntlets, rubber boots and Vinylite aprons. The gauntlets should reach close to the elbow but, if shorter, Vinylite sleeves should be worn fastened at the wrist over the gloves to prevent the entrance of irritant solutions into the gloves. When rubber boots are used, the trouser legs should be worn over the tops of the boots to prevent the entrance of fluid into the boot.

Small metal parts are cleaned by immersing them in solutions of degreasers. Such solutions are usually petroleum solvents such as kerosene, Stanisol, Varsol, Stoddard solvent, etc. Some of the petroleum solvent degreasers also contain carbon tetrachloride. Workers were seen to have their bare hands and arms immersed in the can or basin containing the cleaning solution, and they were wiping the metal parts with a rag soaked in the solution. This practice if continued will ultimately cause either an acute eczematoid dermatitis or a chronic fissured, lichenified dermatitis, and may even cause symptoms of systemic poisoning from the inhalation of the fumes of the carbon tetrachloride and the petroleum distillate.

Workers at such operations should be furnished with long solvent-proof rubber gauntlets, Vinylite sleeves reaching to the axilla over the gauntlets, and Vinylite aprons. They should be instructed to wear the protective clothing to prevent dermatitis, and not to use the solvent for cleaning the hands and arms. The operations should be conducted under an exhaust hood where the fumes are drawn away from the worker's face to prevent inhalation.

In the machine shop there are used on the various lathes and cutting tools, various types of both soluble and insoluble cutting oils. However, no marked cases of oil acnes were noted. Nevertheless, waste or clean wipe rags should be freely available and carried by the workers to wipe oils and greases from the skin.

All the machine shops inspected were large enclosures several hundred feet long and as wide, yet there was only one place where the hands and arms could be washed. It required a walk of several hundred feet from most places in the shop to reach the wash basin. Moreover, in one of the machine shops there were no soap and towels provided.

It is recommended that strategically-placed washstands should be installed in railroad machine shops so that no worker need walk more than 50 feet to reach one. The washstand should have hot and cold water, a dispenser of a suitable granular industrial cleanser containing a vegetable scrubber, soap and superfat; paper towels, and a dispenser containing a suitable protective ointment which the workers can freely use on the skin after washing off the oil, grease and dirt. Someone should be employed to see that the washing facilities are kept clean and in good repair, and that soap, protective ointment and towels are adequately supplied. Placards should be placed in various conspicuous places, warning the workers not to use solvents to remove soil from their hands and arms, but to use the provided washing facilities.

ROUNDHOUSE INSPECTION: In the roundhouses, the locomotives are serviced and, if necessary, are disassembled and reassembled. The roundhouses inspected had a separate area allocated to Diesels and a separate area to steam locomotives. The complaints of increased cases of dermatitis came from among the crews servicing the Diesels.

In the roundhouse there is a cleaning tank containing a strong alkaline solution for removing dirt from oil filters and other parts which are not sent to the machine shop. The same preventive measures as described for such tanks in the machine shops, apply here.

In addition to skin hazards from oils, greases, and solvents described in the machine shops, workers on the Diesels are exposed to Diesel oil, a petroleum oil containing additives used for fuel, to the anti-rust compounds used in the cooling fluids of the Diesel radiators, and to the crankcase oil containing additive chemicals. The Diesel oil is a petroleum distillate of a pale yellow color with a boiling point higher than kerosene. It alone can defat the skin and act

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as a primary skin irritant much like kerosene. Additives to increase the power of the oil may also increase the irritant properties of Diesel fuels.

The anti-rust compound in the cooling system is a mixture of sodium di-chromate and alkalis such as sodium carbonate and caustic soda. It is received in the form of a powder or in pellets, and is dissolved in tanks of water in a room called the water-treatment room. The worker weighing out the chemical and placing it in solution is exposed to the action of the powder or pellet. The alkaline di-chromates are well-known primary skin irritants and sensitizers. They can, in strong concentration, cause chrome ulcers, and nasal and buccal mucous membrane ulcerations, and in recent years the inhalation of chrome dust or vapors has been found to be a cause of lung cancer. The worker engaged in weighing and mixing the anti-rust compound should be provided with and instructed to wear rubber gloves and a respirator while performing his duties. Moreover, the container of the anti-rust compound should have on it a large caution label stating its contents and warning that the container must be kept closed because the dust is an irritant. It should also state that in case of contact it should immediately be washed off the skin with plenty of water. Also that if the dust has been breathed, the eyes should be flushed with water and the mouth and nose should be rinsed with water.

The chromates in the cooling system may cause sensitization dermatitis, therefore before disassembling the cooling system the radiators should first be drained, the worker being careful not to get splashed with the solution. After draining, the cooling system should be flushed with at least twice as much water as it can contain so as to remove as much of the chromate solution as possible before disassembling. Workers doing this job should be provided with and instructed to wear rubber gloves, impervious sleeves, and aprons. In addition they should be provided with a water repellant protective ointment to use on their hands, arms and face to give additional protection in case the solution enters the gloves and sleeves.

Workers draining and cleaning the crankcase are exposed to the Diesel lubricating oil with its additives and abrasive sludge. They should have available clean waste or clean wipe rags which can be stored in convenient places so as to be in easy reach, and they should be instructed frequently to wipe oil and sludge from the skin and frequently to wash the soiled skin with soap and water.

One of the roundhouses inspected had no washing facilities at all. The two others each had one wash and locker room, several hundred feet distant from most parts of the roundhouse.

It is recommended that strategically-placed wash basins be placed so that no worker need walk more than 50 feet to wash his hands, that they be equipped as described for machine shops, and that placards be placed in the shops warning workers against using solvents to wash the hands and advising them to use the washing facilities and protective ointments provided by the management.

Cases of Dermatitis Seen

IN THE three railroad machine shops and roundhouses, 30 workers who complained of dermatitis were examined. Of this number, 14 gave a history of having had dermatitis, but had no skin lesions at the time of the examination. Of the 16 having dermatitis at the time of the examination, seven were probably of occupational origin, and caused by greases, Diesel oil and solvents. None was seen that could be attributed to the coolant fluid. None of the cases was of sufficient severity to keep the man from working.

The remaining nine cases were non-occupational and diagnosed as follows: tinea cruris—1; tinea pedis and phytid of hand—3; acne vulgaris—1; psoriasis—1; vitiligo—1; generalized papular dermatitis (food alergy)—1; and keratoderma palmare et plantare and stasis eczema of ankles—1.

Summary

THE PRINCIPAL dermatologic hazards in the railroad machine shops and roundhouses investigated were petroleum and chlorinated hydrocarbon solvents and alkalis. The use of Diesel locomotives has added Diesel fuel oil, Diesel crankcase oil and coolants containing chromates to the skin hazards. The principal preventive measures recommended are the installation in machine shops and roundhouses of a sufficient number of strategically placed wash stands with suitable industrial cleansers and towels available over each. Clean waste or clean wipe rags should be within easy reach and freely available to workers in the machine shops and roundhouses. Protective clothing or protective creams should be used on jobs where otherwise the skin becomes soiled with irritant chemicals. Workers should be educated as to the hazards entailed by their jobs, the precautions to observe and the proper use of the protective measures provided. It may not be amiss to conclude with the statement that all dermatologic cases should be treated by a qualified dermatologist who is not likely to mis-diagnose or mis-treat the condition.

(915 Nineteenth Street, N.W.)

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Medullary Nailing in the Treatment of Industrial Injuries

DANA M. STREET, M.D.
Chief, Orthopedic Surgery, Kennedy V.A. Hospital
Memphis, Tennessee

MANY industrial injuries are minor in nature and can be treated on an outpatient status. While fractures of the long bones do not loom large in terms of total figures, they assume considerable importance when length of disability is considered. Keating[1] reported 3597 injuries at his plant in 1946, of which only 55 were compensable, and only five required general hospital care, one of these being a fracture of the tibia.

TREATMENT of fractures of the long bones in the past has involved long periods of immobilization resulting in joint stiffness and muscular atrophy. The period of disability was considerably reduced by a carefully supervised program of exercise of the uninvolved parts during recumbency and of rehabilitation after union of the fracture, as Aitken[2] has so well described. However, a fracture of the femur with the best of treatment resulted in anywhere from six months to one year of disability. This meant the loss not only of a considerable number of man-hours of work but was frequently a major calamity to the individual concerned. The prolonged suffering and worry over the loss of his job, the fear of possible permanent incapacity and inability to provide for his family led to mental depression and an anxiety state the effects of which were of long duration.

In the treatment of spine fractures Nicoll[3] has found better results when no attempt is made to reduce the fracture, but, ignoring deformity and poor anatomic results, the patient is returned to work early.

IT IS interesting that the method of medullary nailing not only results in the shortest disability but also a minimum of deformity. The principle is mechanically simple, consisting of a metal rod within the marrow cavity to act as an internal splint. External fixation such as a cast, splint or traction is then unnecessary, and the joints and muscles can be exercised as soon as soft tissue soreness permits. This advantage is most apparent in fracture of the femur where instead of a six-month's disability the patient can often return to work at six weeks and continue his occupation while healing of the bone is taking place. One of our patients returned to working a full eight-hour day in a machine shop without symptoms seven weeks after nailing.

The operative technique which we have found to be the simplest and most uniformly satisfactory is the open reduction and retrograde insertion of the solid diamond-shaped nail. This is driven up through the proximal fragment and trochanter without reaming. The skin is incised when the point can be felt subcutaneously and the nail driven on up until the end is even with the end of the fragment. The fracture is then reduced and held with a clamp while the nail is driven down into the distal fragment until the driver strikes the trochanter. This leaves only the threaded stud exposed, and irritation of the gluteal muscles is negligible. It is seldom necessary to put a cap on the stud.

The length of the nail should be carefully determined prior to nailing by measuring the well leg from tip of the trochanter to knee joint line laterally (margin of femoral condyle) with the hip and knee flexed. One inch is subtracted from this measurement. Experience has shown the 11-mm. nail to be sufficiently strong and that 95% of adult femurs have a canal sufficiently large to take a nail of this size. In the remaining percentage the small canal may be enlarged with a Stryker[4] broach to fit the 11-mm. nail.

In the larger canals some looseness of fit is not serious provided the fracture site is stable and the end of the nail is well down in the cancellous bone. However, in canals of 15 to 20 mm. diameter it is well to straddle the nail by two screws. If one of these crosses the fracture line it effectively controls lateral displacement.

The complications such as fat embolism and infection have been discussed in detail in previous publications[5,6] and have been found to be of the same incidence as with other methods. In regard to non-union this method is superior. In the series of 100 cases previously reported[7] the two listed as questionable have since united, making 100% union.

Following operation it is well not to be over zealous in early ambulation. We have never had reason to revise our original program of three weeks in a balanced suspension followed by three weeks of gradually increasing weight bearing on crutches until fully weight bearing at six weeks. This allows healing of soft tissue and a start on callus formation before the limb is subjected to much strain. This may be a factor in our 100% union.

THE results in terms of disability have been reviewed by Haebler,[8] Böhler,[9] and others and show a marked improvement over previous methods. With conservative treatment the period of disability ranged from 7½ months in the series

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of Van Goerder[10] to approaching two years in that of Böhler. With medullary nailing others, notably Haebler, also Fischer and Maatz,[11] show an average figure of less than six months. In a series reported by the author[12] a similar advantage was noted.

While the results are less striking in fractures of other bones than in the femur, there are the definite advantages of more anatomical reduction and better function in these also. The method has been used extensively in fractures of the metacarpals, forearm, humerus, clavicle, femur, tibia, and metatarsals.

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"Gimme Some of This"

If your appetite for the dry medical literature coming to your desk is jaded and you're falling behind the scientific procession, try some of the sprightly stuff fed to the public in most of today's popular magazines. It will open your eyes to startling discoveries and useful hints you may never hear about if you limit your reading to the horse-and-buggy scientific journals. In one recent month alone you could learn, along with your patients, about a new C-bomb that halts cancer; a new drug in tablet form that corrects the inherited nutritional deficiency responsible for alcoholism; what vitamins to give or take; how to save your patient's teeth; teach him to live with his ulcer; cure his constipation without drugs; and you can even learn how to detect dope addiction in the newborn! In addition, there are any number of brief timely tips all time-tried and proved that should be of immense help in your practice. Do you know that horse-radish stimulates bile flow and shortens the duration of infectious hepatitis; that butyl-amino-benzoate combined with procaine injected pre-operatively relieves postoperative pain; that gamma globulin protects against polio; that B complex with crude liver extract and a high protein diet is good for tender breasts; that window-shopping will divert the fatty from eating; and that sex-hormones can help the psychotic? Have you heard of the new drugs for arthritis and gout, the new nerve-cutting operations for Buerger's disease, new treatments for bursitis, hip-disease, Parkinsonism, histoplasmosis, trichinosis, menstrual cramps, and mental confusion in the aged? Keeping up with these signal advances is a must—if only to be prepared for the patient who comes in with a self-made diagnosis demanding, "gimme some of this," as he hands you a clipping from his favorite magazine.

—*Detroit Medical News*, September 15, 1952.

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Recovery from Anthrax Meningitis

DANIEL KINDLER, M.D.
Associate, Medical Research and Experimental Medicine
University of Miami School of Medicine
Miami, Florida

SYSTEMIC anthrax infection (as differentiated from cutaneous anthrax) usually results in death in a few days,[1] the etiological factor often coming as a surprise finding at autopsy.[2]

Anthrax meningitis has always been malignant, and no reports in the literature could be found of its successful treatment. However, favorable results have been reported about the use of penicillin in experimental animal anthrax.[3] There are also recent reports of the cure of cutaneous anthrax in man by the use of penicillin.[4]

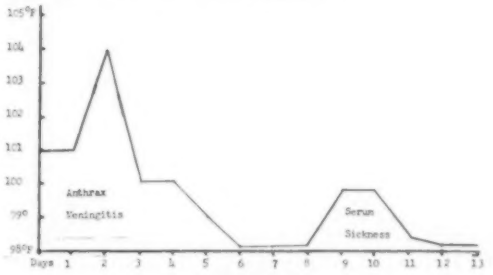
A resume of the last 66 cases of anthrax at the Alexander Smith & Sons carpet shop[5] revealed four deaths: one case was complicated by diabetes mellitus, and the other three died of anthrax meningitis.

Case Report

WHITE male, age 57, employed as a wool picker at the carpet shop for two weeks. He presented himself at the infirmary showing a 0.5 cm. vesicular lesion, surrounded by edema, located on the upper lip, present for 24 hours. Anthrax was immediately suspected, and a culture and slide examination were made from the lesion. Numerous anthrax bacilli were seen.

First Day: The patient was hospitalized. The initial treatment consisted of 100,000 units of penicillin followed by 100 cc. of anti-anthrax serum, both given intramuscularly.

Second Day: The temperature continued to climb from 101°F to 102°F; the right submaxillary lymph glands became enlarged. Pain and bulging behind the right eye indicated pressure, thus suggesting cavernous sinus thrombosis. During the night it was noted that the patient developed some twitching in the arms and face, and he complained of pain in the back of the neck. A spinal tap was performed and the fluid appeared clear, the cell count was 0, the sugar, chloride and globulin were all normal. A culture of this fluid was taken and a guinea pig inoculation was performed. Despite the normal microscopic and chemical findings, meningeal involvement was suspected, and 30,000 units of penicillin were injected intrathecally. The patient was given 4 gm. of sulfadiazine initially, followed by 1 gm. every four hours. Eight hours later the temperature rose to 103.8°F, and the patient developed rigidity of the neck, a positive Kernig's sign, and a positive Babinski's sign. A second spinal tap at this time revealed cloudy fluid, a cell count of 3500 cells/cu. mm., 4 plus globulin, negative sugar, protein 1200 mg., and 760 chloride. Twenty thousand units of penicillin were again injected intrathecally, and cultures again made.



Temperature Chart

Third Day: During the night the temperature began to fall; by 8:00 A.M. it was 102°F. Another spinal tap was performed: cell count 328/cu. mm., sugar 0, globulin 0. Twenty thousand units were injected intrathecally, and a spinal tap at 7:00 P.M. revealed 42 cells/cu. mm.

TABLE I.
SPINAL FLUID EXAMINATIONS

Date	Cells	Appearance	Sugar	Globulin	Total Protein	Chlorides	Guinea Pig Inoc.	Penicillin Intrathec.
9-24-46								
A.M.	0	clear	Norm.	0	10 mg./100 cc.	640 mg./100 cc.	pos.	30,000 u.
P.M.	3500/cu. mm.	cloudy	Neg.	4 plus pedicle	1200 mg/100 cc	760 mg/100 cc.	pos.	20,000 u.
9-25-46								
A.M.	328/cu. mm.	slightly cloudy	Neg.	0				20,000 u.
P.M.	42/cu. mm.	clear	Norm.	0				20,000 u.
9-26-46								
A.M.	22/cu. mm.	clear	Norm.	0				20,000 u.
10-2-46	47/cu. mm.	clear	Norm.	0				

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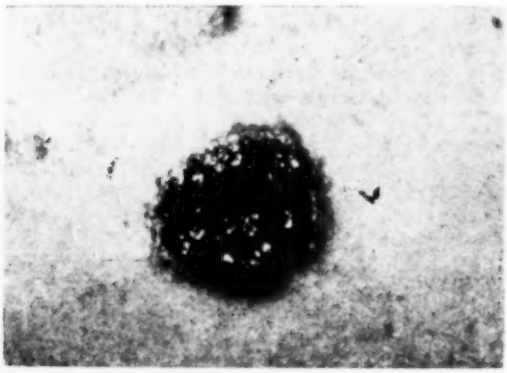
Twenty thousand units of penicillin were again injected intrathecally, and by midnight the temperature was 100°F.

Fourth Day: A spinal fluid examination at 8:00 A.M. revealed a cell count of 22 cells/cu. mm., normal reduction of sugar, and negative globulin. The patient again received 20,000 units of penicillin into the spinal fluid. The culture of the first sample of spinal fluid, which had been clear, was reported negative. However, in the examination of the inoculated guinea pig a pure culture of anthrax bacillus was obtained. The culture of the second sample of spinal fluid, which had been cloudy, was reported positive for anthrax bacillus. The guinea pig inoculation was also positive.



Anthrax Lesion

Fifth to Eighth Days: The patient's temperature remained within normal limits; his meningeal irritation slowly disappeared; and the lesion took on the appearance of a 1.5 by 1.5 cm. black, gangrenous-like crusted area. The edema surrounding the area disappeared, and the enlarged glands in the neck also subsided.

Ninth Day: The patient developed symptoms of serum sickness: pruritus, urticaria, back pain, and a mild rise in temperature. All the symptoms disappeared in two days.

Fifteenth Day: The hard-crusted lesion dropped off the upper lip leaving no visible scar.

Twenty-eighth Day: The patient was able to report for work.

Summary of Medication

1. Total of 500 cc. of anti-anthrax serum intramuscularly: 100 cc. given initially and 50 cc. given every eight hours thereafter for eight doses.

2. Total of 110,000 units of penicillin intrathecally: 30,000 units given originally, followed by 20,000 units every 12 hours until five doses given.

3. Total of 4,400,000 units of penicillin intramuscularly: 100,000 units given every three hours for four days, followed by 50,000 units given every three hours for three days.

4. Continuous 1:4000 wet penicillin dressing to lesion.

5. Total of 28 gm. sulfadiazine: 4 gm. given initially, with 1 gm. repeated every four hours for four days.

Summary and Conclusions

REVIEWING the literature and the series of cases at a carpet shop, one is impressed with the following facts:

1. While anthrax infection is rare, its occurrence among wool workers is sufficiently frequent that one should always be suspicious of cutaneous lesions in such workers.

2. The incidence of meningeal involvement in anthrax infection is about 5%.

3. Treatment for meningeal anthrax infection should be instituted immediately upon clinical evidence of meningeal irritation. In the case reported above the first spinal fluid was entirely negative except for the guinea pig inoculation which was reported positive four days after the treatment was started.

4. Inspection of the table shows the marked response to the medication.

(602 S.W. 12th Avenue.)

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Economy

IN PLACE economy among the first and most important virtues and public debt as the greatest of dangers. To preserve our independence we must not let our rulers load us with perpetual debt. We must make our choice between economy and liberty, or profusion and servitude. If we can prevent the government from wasting the labors of the people under the pretense of caring for them, they will be happy. The same prudence which in private life would forbid our paying our money for unexplained projects forbids it in the disposition of public money. —THOMAS JEFFERSON.

National Sanitation Foundation Announces First "Seal of Approval" for Food and Other Equipment with Health Connection

AN INNOVATION by the National Sanitation Foundation, which has its headquarters at the University of Michigan's School of Public Health in Ann Arbor, will afford still further safeguards for the health of the public.

This will be accomplished by issuing NSF "Seals of Approval"—for the first time in medical and public health history—for deserving wares of manufacturers who meet NSF standards of sanitation in the design and manufacture of those products.

Following the establishment of standards for a particular type of equipment, the approval seals will be bestowed only after painstaking investigation in the Testing Laboratory of NSF in Ann Arbor, or, in cases where this is not feasible, at the manufacturer's own plant by NSF staff.

Standards to be applied in reaching conclusions leading to the awarding of the use of the seals will be created by NSF joint industry-public health committees, representative of the entire United States. A chart indicating the method of operation of the joint committee appears on the next page. Below (for the first time in any publication) is a reproduction of this first sanitary Seal of Approval.

The purpose of this public health enterprise, as stated by Walter F. Snyder, Executive Director of NSF, is to promote uniform, nation-wide sanitary standards for the design and use of all health-connected equipment, and, in particular, that related to the preparation, service and storage of food in public places.

The scope of coverage will embrace the sanitary effectiveness of all public-used appliances such as soda fountain and luncheonette equipment, dishwashing, and laundry devices. Enlarged experience may be expected to extend the coverage appropriate to this seal endorsement until standards for virtually all devices with a health connotation, whether for commercial or home use, have been developed and NSF approval seals made available.

The heart of this service, apart from the requisite standards, will be NSF's Testing Laboratory itself. This is directed by Walter D. Tiedeman, Resident Lecturer in Environmental Health in the University's School of Public Health. After elaborate, appropriate testing, the NSF Seal of Approval will be available to all manufacturers whose equipment has a bearing on health through sanitation and conforms and continues to conform to the accepted standards. Once each type of equipment receives NSF approval, a contract is entered into between the manufacturer and NSF which puts the burden of continued conformance to NSF standards squarely on the manufacturer, with periodic re-testing by the NSF laboratory staff.

DR. HENRY F. VAUGHAN, Dean of the University of Michigan's School of Public Health, and president of NSF, has pointed out that equipment leading to NSF approval can be expected to be acceptable without further local testing to health departments all over the United States and for the first time in history.

Presently, he explains, health codes applicable to food sanitary equipment vary enormously throughout the country, thus imposing hardships upon many manufacturers and equally difficult tasks of inspection and testing within various state laboratories.

When the standards leading to seal approval are sponsored by official state agencies themselves, it should then come about that no further state or local testing will be required.

NSF SEAL OF APPROVAL
This Seal, with sub-reference No. 1, appearing on new soda fountain and luncheonette equipment, indicates to health officials, purchasers, and public that the manufacturer has met NSF minimum sanitary requirements for health and safety.

THE National Sanitation Foundation is a nonprofit, unprejudiced scientific organization dedicated to the prevention of illness and the promotion of better living through a better environment, and, in particular, the better environment provided by devices which are superior in sanitary design and usage.

The tasks ahead of NSF in the application of this sanitary seal service are prodigious. The creation of the standards to be met necessitates the painstaking study by outstanding public health officials the country over and acceptance by their official boards. Then only, and governed by these standards, may testing procedures be conducted within the NSF laboratory.

Thus far, formal standards have been adduced for soda fountain and luncheon-

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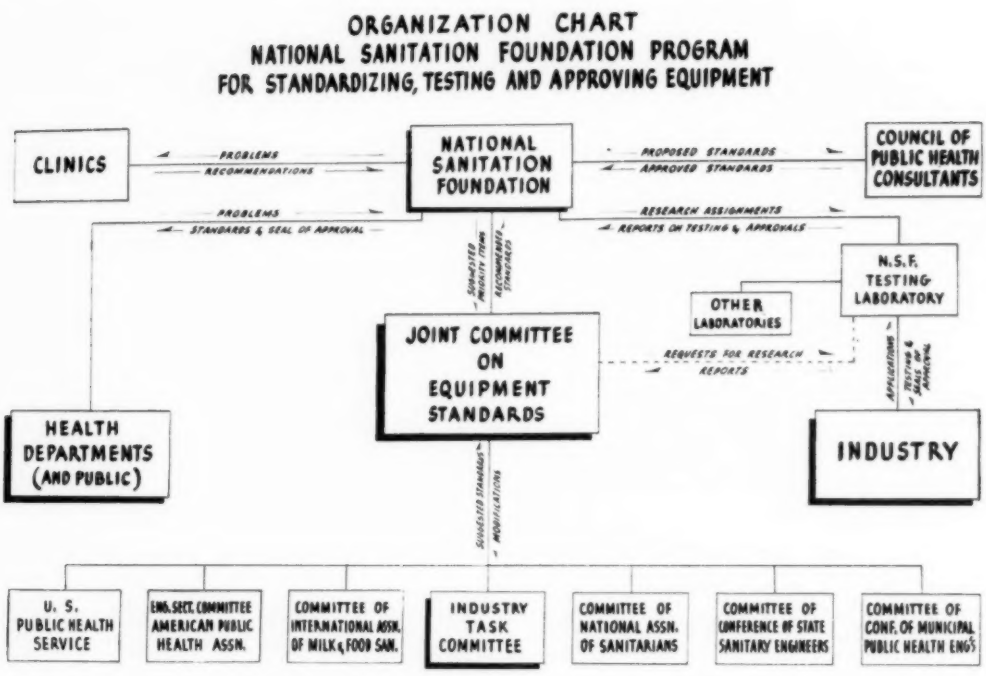

HOW NSF JOINT INDUSTRY-PUBLIC HEALTH COMMITTEE ON EQUIPMENT STANDARDS WORKS
Fields in which uniformity of sanitary specifications in design and manufacture of equipment is needed both by industry and health officials are submitted to National Sanitation Foundation. NSF Joint Committee on Equipment Standards, consisting of industry "task committee" and representatives of six leading public health and sanitation groups and NSF personnel, work out suggested standards, which are then approved or modified by NSF Council of Public Health Consultants. NSF publishes and distributes standards to industry and health departments throughout U.S. Manufacturers build new equipment to meet jointly approved standards and apply to NSF for approval. NSF Testing Laboratory tests equipment, and, if it meets standards for industry, issues NSF seal of approval on contract basis. Manufacturer now knows equipment will pass health inspection anywhere in U.S.; purchaser buys with confidence; health departments have definite guide for approving; public's health is safeguarded and improved.

ette equipment and for the food-service industry. The first has been published as "Standard No. 1." The food-service standards are, at this writing, in the hands of the printer, to emerge as "Standard No. 2."

Speedily, but not hastily, other standards will be devised. For example, at the first national sanitation clinic, held in Ann Arbor in 1948 by NSF, the 400 representatives of industry and public health recommended that sub-clinics leading to uniform standards be established in the following additional fields: (1) baking, roasting, frying and broiling equipment; (2) food preparation machinery such as slicers, choppers, cutters, mixers and grinders; (3) steam cooking equipment and peelers; (4) refrigerators and refrigeration equipment.

Additional types of equipment, among others, for which sanitary standards are needed and have been suggested are home laundry machines, and dispensers of liquid and moist foods, whether manual or automatic, as in vending machines.

Soon this clean looking, attractive blue and gray NSF label of endorsement will become familiar to the public wherever health connected equipment may be found. And that is just about everywhere. It provides assurance that the equipment manufacturer has produced equipment satisfactorily meeting the high requirements of the National Sanitation Foundation and its joint industry-health committees.

In shortly coming years, it may come about that only equipment bearing the NSF seal may be accepted heartily as conforming fully to sanitary requirements essential to good living.

Year by year, health in the United States becomes just a little better for all the public. It is prospective that this bettered living may, in part, be accomplished through the continuing services of the National Sanitation Foundation.

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John Jay Wittmer

John Jay Wittmer
(1895-1951)

by

S. Charles Franco, M.D.

EVERY professional association maintains, as a part of its permanent annals, certain records of illustrious members no longer living. The Industrial Medical Association, now in its thirty-eighth year, is continually nourished by the achievements and contributions of a notable band of former presidents, officers, fellows and members no longer sharing in occupational medicine.

Tall among industrial physicians of any period was JOHN JAY WITTMER *who died May 19, 1951. Fortunate is that man who in life and after death is served by unconditioned friendship.* DR. WITTMER *is so served; his associate Dr. Charles Franco has provided a notable record of the life of his friend, rich in details of every stage—boyhood, education, work in early days prior to his medical doctorate, struggling medical years, and then the fully developed and magnificent man of medicine. This heart-warming tribute is at once the history of a man and the skillful portrayal of the growth of a character. It now becomes part of the history of the Industrial Medical Association, known and served by* DR. WITTMER *as the American Association of Industrial Physicians and Surgeons.*

WITH the demise of JOHN JAY WITTMER on May 19, 1951, the Industrial Medical Association lost a most distinguished member. This loss was shared by all those who were privileged to work with him—his fellow physicians, and the employees and officers of the Consolidated Edison Company of New York. DR. WITTMER was a recognized authority in the field of industrial medicine. He was known nationally in industrial, medical, and educational circles for his plans for employee health, evolved from his firm conviction that management and labor, working together, could solve much of the nation's health problem. His beliefs stemmed from his long experience with the Consolidated Edison System which began when he joined the Brooklyn Edison Company in 1924 as a staff physician. He subsequently advanced through such positions as Supervising Physician, Medical Director and Personnel Director until, in May, 1950, he was elected a Vice-President of Consolidated Edison. Under his direction, an employee medical and benefits program was developed which is considered a model for American industry.

JOHN JAY WITTMER was born in Brooklyn, New York, August 26, 1895, the seventh child in a typical middle class family that was to number nine children. He attended the local elementary school and Eastern District High School in Brooklyn. After graduation in 1913, he went to the University of Chicago for two years, where he majored in physical education. His father died in 1914 and, when his college work was finished in 1915, he returned to Brooklyn. He was physical education director at the Y.M.C.A. in Greenpoint for a year, and then, in 1916 he entered Fordham University for his pre-medical course. Part-time work in physical education at the Y.M.C.A. provided a source of income. He joined the freshman class at Long Island College Hospital in September, 1917. Soon after, he enrolled in the Army Medical Corp Reserve and volunteered for active duty. In December, 1917, he was assigned to the Sanitary Corps. By March, 1918, he was commissioned a second lieutenant, and was sent to the Army Medical School as an instructor in bacteriology and chemistry. In his classes there were physicians whose medical school education had not included these subjects. In September, 1918, he was transferred to Fort Ontario, where he was in charge of the medical laboratory. He was discharged at Christmas, and returned to Long Island College Hospital.

Medical school represented three and a half busy years during which the pressure of time for his studies was always superimposed upon the problem of earning his way. A variety of jobs helped him support himself; he was simul-

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taneously physical director of the local Y.M.C.A., supervisor of playgrounds in the Department of Parks, City of New York, and manager of an orphan boys home. This necessitated long hours of work to be combined with time for study. Perforce, he developed the ability to read quickly and retain long; to work out his problems in the laboratory, while more than holding his own in the classroom. His fraternity brothers in Alpha Kappa Kappa still remember his "playback" of lectures in physiology as a review course.

In the summer of 1919 there was a pleasant interlude; he was appointed Associate Director at Camp Hawthorne on Panther Lake, Raymond, Maine. The late Major Elliott Bigelow, of Brooklyn, had plans for a boys' camp in ideal surroundings. It took JOHN WITTMER'S organizing ability and vision to set up a summer playground which to this day serves as a happy outdoor experience to the sons of the men who were his first campers. Over the next four years the administration of this summer camp provided a practical course in business management, and, perhaps more important, in personal relations. Many are the level-headed "Down-East Yankees" who still remember "DOC" WITTMER as the man who got things done in a nice way.

The school years passed swiftly, and, withal, pleasantly. JOHN was popular with his classmates, and the first election in the sophomore year resulted in his becoming class president. He retained this post through the junior and senior years. His classmates remember his diplomacy in dealing with the problems that arose with the faculty. His talent for leadership was marked, and this, combined with rare scholastic aptitude, stamped him as an unusual person. In the senior year he was elected president of the student council, and his fraternity brothers voted him president of the Zeta Chapter of Alpha Kappa Kappa. This year also brought the opportunity to work as an extern on the Orthopedic Service at Long Island College Hospital. At graduation, he received the Mitchell Prize, which was awarded to that member of the graduating class who in the judgment of the faculty was best qualified in all the departments of medicine.

His internship was in the Department of Medicine at Long Island College Hospital, under the late Dr. Luther F. Warren, where he obtained a good background in diagnostic medicine from one of its great teachers. Dr. Warren offered the opportunity to continue work with him, but the young man chose to practice on his own. In the fall of 1923 he established an office for the general practice of medicine in the Richmond Hill Section of the Borough of Queens. At the recommendation of Dr. Warren he was appointed Instructor in Biology at the Brooklyn Polytechnic Preparatory School, where he served until 1927. Here strong friendships were formed with students some of whom later became practicing physicians and dentists. He began his teaching affiliation with Long Island College Hospital as an Instructor in the Department of Preventive Medicine, under Dr. H. Sheridan Baketel. In 1928 he was made Assistant Professor, and he continued in this capacity until 1945 when he resigned to accept appointment as a member of the Board of Trustees of Long Island College of Medicine. He was married to Dorothy Burgoyne on February 12, 1924, and began a happy family life which was added to by his sons, Craig and Bruce. His was a warm family circle, in the American tradition, with its roots in a religious background. The family attended Emmanuel Baptist Church and participated in its community activities. DR. WITTMER was appointed President of the Board of Trustees of his church in 1950.

In late 1924 he moved his office to 95 Herkimer Street, in downtown Brooklyn. Here he was to conduct a busy general practice for the next nine years. He was appointed to the surgical service of the Cumberland Hospital where he accomplished his ward work and assisted in the operating room. He cared for his private patients at the Prospect Heights Hospital. These were busy years, combining his increasing interest in industrial medicine with the demands of an active practice and hospital duties. The hours were long, and it was not uncommon to make house calls late at night after completion of office time. He was eminently successful in his private practice. The years in Y.M.C.A. work had given him the opportunity to mix with people of all types, and his private practice developed in him a deep understanding of human situations. His patients still remember him for his equanimity in trying circumstances.

HIS ENTRY into the field of industrial medicine was much like that of other pioneers in this work. Almost from the start of his practice, he was one of Brooklyn Edison's staff physicians, and thus many of his patients were employees. It was not long before he was thinking and talking about some form of organized care for the company people who needed medical attention. Somehow his interest in better medical methods came to the attention of Matthew Sloan, then President of the company, and shortly he was called to the President's office. The occasion was not altogether pleasant. Mr. Sloan, a dynamic executive of the old school, didn't think much of physicians, and said so. He believed their presence in industry was a cause of disorganization. Absenteeism seemed to be increased by their haphazard disposition of the duty status of employees; it was not uncommon for them to disrupt the smooth routine of a department whose work schedule had been planned ahead for several weeks. Altogether they were an incitement to chaos. Frankly, he didn't want a formal medical service if it meant having them around. The young doctor, however, was not to be put off. He asked for the

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opportunity to make a beginning, promising Mr. Sloan that if, after a three weeks trial, he couldn't prove the usefulness and value of his plans, the whole idea could be scrapped. He got a qualified approval, and in January, 1924, the first Medical Department facilities were set up in a little room over a "five-and-ten-cent" store on Bond Street in the downtown business section. The facilities were limited. Curtain partitions separated a few examining tables. Only pre-employment examinations were done. The Doctor worked several hours each morning, assisted by one nurse. The three weeks' trial period passed without any word from Mr. Sloan, but DR. WITTMER went ahead on the basis that "no news is good news." It was not until several months later that Mr. Sloan made an unannounced visit, only to say he was still unconvinced that medical service had any place in his organization. He didn't suggest any change, however, and so the Medical Department, such as it was, continued to function in harmony with the operating departments. This went on for a year.

Then, one day in January, 1925, Mr. Sloan came again to the medical office—with a furuncle on his nose adjacent to the upper lip. He asked DR. WITTMER to incise it, but was advised against the procedure. That didn't suit him, and so, as president of the company, he ordered DR. WITTMER then and there to do it nevertheless. But the Doctor stood his ground, telling Mr. Sloan that as a physician he alone was competent to decide what should be done. Mr. Sloan stalked out in high dudgeon; he was not accustomed to being disobeyed. A day or so later, however, he met a prominent surgeon in New York who was a close family friend. Discussing the situation, the surgeon bluntly told him he was fortunate that the infection had not been incised, and that he probably owed his life to the physician who had defied him. The next day Mr. Sloan appeared in the medical office, this time to apologize.

In 1926 the medical facilities were moved to the main building of the Brooklyn Edison Company on Pearl Street, where the Medical Department was given about 5,000 square feet. The services were extended to include a health check of all employees, and supervision of plant sanitation and working conditions. A few part-time consultants were added to the staff. DR. WITTMER was kept busy with his private practice as well as his part-time industrial medical work, but again his active mind, and big heart, were stirring with dreams of a kind of medical care that would do the utmost for the employees—those who could not afford the cost of complete medical care; the arthritic who needed dentistry and short of that couldn't be benefited by any type of medical treatment; the man with gastric symptoms who deferred an x-ray because of the expense and sometimes waited until an inoperable carcinoma had to be diagnosed. He was impressed with the desire of the worker to pay something, though he might be unable to defray the whole cost. In these thoughts was born the idea of a pre-payment medical plan, for "cigarette money," that would render comprehensive medical care and make available to the working man the best in medical practices—the idea that made JOHN WITTMER industrial medicine's earliest and strongest protagonist of "pre-payment" medical care in employment.

In 1928, Mr. Sloan assumed the presidency of four other metropolitan electric companies which, with Brooklyn Edison, became known as the New York Edison System. This development opened new avenues of advancement to DR. WITTMER. By 1930, he had added the duties of supervising physician of New York Edison, and, in 1933, he became Medical Director of Consolidated Gas Company as well. During this period, the medical functions were divorced from the Personnel Department and set up as an independent organization. DR. WITTMER proceeded to weld the medical units of the companies together. After the gas and electric companies merged to become today's Consolidated Edison, he was named Medical Director. His private practice, long before, had been dropped as he bent to the numerous problems of industrial medicine.

In 1930 he had lectured on inhalation therapy with carbon dioxide and oxygen mixtures for pneumonia and neo-natal atelectasis. His interest induced the Brooklyn Edison Company in 1932 to establish an oxygen chamber in the pneumonia ward of the Long Island College Hospital, and he visited the ward daily to study the effects of oxygen therapy in pneumonia. During these years he published work on accident control and occupational disease hazards.

The consolidation of the gas and electric companies in New York in 1936 resulted in further enlargement of the Medical Department facilities, and the plan for comprehensive medical care became a reality. The Mutual Aid Society of the employees of the gas company had been organized in 1891, and had gradually increased its scope so that by 1915 the employee contributions were matched by the company contributions to establish a sick benefit fund. Further progress toward hospitalization of employees was made in 1922. After the consolidation of the utility companies in 1936 the Society was expanded, and through DR. WITTMER'S efforts it became allied with the Medical Department. The added facilities included hospitalization in a number of approved hospitals in New York City, with the employee free to make his own choice. A diagnostic clinic was established in the Medical Department, and a district physician service covered the off-duty illnesses. Dental service was also provided. Outside consulting physicians gave advice on problem cases in their special fields. A farm and a beautiful tract of land in

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the Green Mountain section of the Hudson River Valley were developed into an ideal convalescent home. Medical Department personnel increased, and two Assistant Medical Directors became part of the administrative staff. DR. WITTMER'S executive ability was signally displayed. He was able in all of this to delegate authority so that his principal assistants could act in their own spheres of responsibility. This left him plenty to do, but despite his many interests and activities he always had the time to talk to the employees, and the physicians and nurses in his Department, ever manifesting that sincere interest in people which is so essential to good human relations. He well understood the problems many of his physicians faced in combining private practice and industrial medicine. He was always "John" to them. The morale of his group was excellent; and it was never impaired through the years by failure to recognize and reward merit. The administrative physicians in his Department came from the ranks of the men who had performed good service. This was one source of an inner strength amply demonstrated in the achievements and standing of Consolidated Edison's Medical Department.

IN 1938 DR. WITTMER was appointed Director of both the Medical and Personnel departments. Here his work was brilliant. His ability to deal with people was appreciated throughout the company. He knew people, with a sympathetic understanding of human situations. He had, and always cherished, the confidence of the working men, many of whom were young in the company when he first organized the Medical Department. Through the years they had been able to turn to him with their problems. They found him not changed with success; always he had the time to listen to them when they needed advice; always he was wise, and firm, and fair. The executives who had been developed during the growth of the combined companies had faith in his ability as a top-notch administrator. His integrity was respected by both labor and management. He stood equally high in his profession. During the busy war years he published work on safety, maintenance of health, and absenteeism. His writings in the personnel field covered personal relations, re-employment of war veterans, and the development of leaders for post-war industry. He organized an industrial medical program for the Long Island College of Medicine. His interest in comprehensive medical care extended to plans for a health insurance program in New York City. His activities in the field of public relations were notable.

In 1945 he became a member of the Board of Trustees of the Long Island College of Medicine which is now the College of Medicine of the University of the State of New York at New York City, and was appointed Vice-Chairman of the Board. In 1946 he was made Chairman of the Executive Committee and also Chairman of the Development Funds Drive to secure financial aid necessary for the building of a medical center in Brooklyn.

His progress in the Consolidated Edison Company continued, with his appointment in 1946 as Assistant Vice-President in Charge of Industrial Relations. He became an active member of the executive team to supervise and direct personnel policies, the medical program, and labor relations. In 1950 he was appointed Vice-President in Charge of Employee Relations, with further responsibilities in this field. His forward vision already extended to the utilization of older employees in industry on a basis that would be mutually beneficial. In December, 1947, he brought national sympathetic interest to the problem of alcoholism in industry, and developed an alcoholism procedure which resulted in the rehabilitation of certain employees to useful work and renewed health. His plea for joint action by industry to tackle the problem of alcoholism among wage earners bore fruit in April, 1951, when the Yale University Center of Alcohol Studies named him Chairman of a National Advisory Council aiding industrial and commercial companies. Shortly before his death he completed plans for a Consultation Clinic for Alcoholism, which was to be devoted to the rehabilitation of the alcoholic in industry. Early in 1952 such a facility was underwritten at the University Hospital by the Consolidated Edison Company as the first step in a plan that might be supported by industry.

DR. WITTMER was engaged in numerous organizations and activities. He was past President, Fellow and Director of the Industrial Medical Association, member of the American Homeopathic Institute and the American Management Association, and Fellow of the American Medical Association and the American Public Health Association. The long list of his memberships included the Conference Board of Physicians in Industry, the Electric and Gas Association of New York, the Green Mountain Lakes Foundation and Green Mountain Lake Farms (as President of both), Kings County Medical Society, New York State Medical Society (of which he was Past-Chairman of the Industrial Medicine Section), New York County Homeopathic Society, New York State Homeopathic Society, and the National Industrial Conference Board. At the Long Island College of Medicine he was Chairman of the Industrial Medical Advisory Committee, Chairman of the Executive Committee of the Board of Trustees, and Vice-Chairman of the Board of Trustees. In addition he was a Director of the Health Advisory Commission of the U.S. Chamber of Commerce, Director of the Advisory Council of National Industrial Nurses, and Chairman of the Industrial Medical Advisory Commission of the Visiting Nurses Service of New York. Other bodies on which he served were the Commission for Coordination between State

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and City Health Departments, Medical Appeals Committee of the War Manpower Commission, Advisory Committee of the Brooklyn Cancer Commission, First Aid Committee of the American Red Cross, and the Advisory Committee of the College of Medicine of New York University.

JOHN JAY WITTMER, successful and beloved as a physician, was also an outstanding example of the successful executive. His career demonstrated the full extent of the development of the capabilities of the physician in industry. His greatest success was in his relation to his fellow men. His ability to organize and direct activities did not dwarf his human qualities. He gave his services willingly, and accorded fair treatment to all. He executed his responsibilities faithfully, and spent great energy in accomplishing his work to the best of his ability. His life was an inspiration, and his exemplification of the type of service the true physician can render his fellow men is a shining legacy that time will always honor.

When Is Old?

FOR THOSE who find comfort in Professor Pitkin's assertion that "life begins at 40" there is still further encouragement in the dictum of the Supreme Court, in the railroad pension case (decided May 6, 1935) that life doesn't end at 65. The majority opinion contains this: "It does not follow, as contended, that a man of 65 is inefficient or incompetent. The facts indicate a contrary conclusion." Meanwhile, when is a man old? Dr. N. Boyd Anderson has given thought to this question. He says: "Our various organs do not cease their functions with a uniform degree. When these involutions are advanced so as to be recognized clinically, then 'age is upon us.' Functional organ retrogression is initiated independently, yet the decreased function of one system soon brings out retrogressive changes in another. Senescence is the result of these retrogressions, old age the resulting complex; and to the internist a man is as old as his arteries, to a surgeon as old as his kidneys. It is not necessary to discuss here the functional changes of senescence, with their skeletal changes, loss of lymphoid structure, digestive disturbances, sluggish circulation, irritated urinary tract, decreased sexual desire, failing vision, etc. If we sum up these functional disturbances and group them as they appear, in the ordinary male they are presbyopia, sexual neurasthenia and a chronic fatigue. The one time powerful virile male recognizes them rather grudgingly, and the oft repeated dressing room phrase is 'I'm not what I used to be'!" But to be old is not necessarily to be also "inefficient or incompetent." Dr. Anderson covers this point, too: "Moses was hoary when he led Israel's children from bondage; Dondolo, blind and past 90, stormed Constantinople; in the Doge Palace at Venice hangs one of Titian's masterpieces painted in his one hundredth year; Gladstone, one of England's greatest prime ministers, was elected at 60 years of age and was still serving at 82; Goethe's best poems were written after he was 75, as was the best literary work of S. Weir Mitchell; Herbert Spencer was active until his death at the age of 83; Darwin's theory of the descent of man appeared when he was 62; Dr. Jacobi was still actively engaged at 86; Elihu Root was sent to Russia at the age of 72; Edison, at 80, was still in the laboratory." And the Supreme Court Justices, who find the facts agreeing with the conclusion that a man is not inefficient or incompetent at 65, have fresh in their minds, the outstanding example of Justice Oliver Wendell Holmes who retired from among them at 94—after nearly three decades of the best work of his life, done while he was in the years past 65.

—From *Industrial Medicine*, May, 1935.

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Current Problems in Industrial Medicine

— The Changing Pattern —

THE ONE-DAY, three-session, "Discussional" at Ann Arbor, March 26, 1952, held at the University of Michigan School of Public Health, by the School in collaboration with the Institute of Industrial Health, the School of Medicine, and the Bureau of Industrial Relations—School of Business Administration, was noted in this Journal for April as an item of news. There it was said: "The program was informal; it was a true 'discussional.' The problems were stated, and almost every one of the 80 physicians, hygienists, professors, engineers, nurses, and safety people who attended had a question, an answer, or a suggestion."

The morning session, with DR. HENRY F. VAUGHAN as Chairman, considered "The Workers' Health," introduced by DR. C. D. SELBY. This was followed by a discussion of "The Workers' Environment," led by DR. CAREY P. McCORD. The third subject was "Professional Qualifications for Meeting Workers' Health Needs," by DR. OTTO TOD MALLERY, JR.

In the afternoon there were two sessions, one for Medical Directors and industrial nurses, the other for safety directors and industrial hygienists. The Medical session, with DR. C. RICHARD WALMER as Chairman, discussed the industrial problems arising out of heart disease, cancer, and other chronic non-occupational disease, industrial health and welfare and management health programs. The Safety and Hygiene session, with OSCAR F. LEHMAN as Chairman, discussed new and unexplored problems in the occupational environment.

The following are from notes taken at the sessions:

The Worker's Health

DR. CLARENCE D. SELBY'S subject was "The Workers' Health." He said: Ordinarily industrial health programs do not change suddenly or, at any one time, importantly. Changes occur by slow and tedious processes, arising out of the collective experiences of management and the professions practicing medicine, nursing, safety and hygiene in industry, and sometimes labor unions. Industrial health departments occupy neutral grounds, and their decisions must always be impartial. Changes are, therefore, products of evolution. Nevertheless, things are happening now that have considerable influence on industrial and medical thinking, and changes are occurring with increasing frequency in industrial health programs as a consequence of them.

To consider and evaluate some of the more important and fix their places in the present industrial health program is the purpose of this Discussional. I have been asked to introduce the titles of those that relate most directly to employee health. A few have been listed in the program. They are:

1. The chronic disabling non-occupational diseases.
2. The common cold.
3. Health and welfare programs.
4. Management health programs.

While these are familiar to all who are active in industrial health, recent experiences and observations suggest certain comments at this time.

The chronic non-occupational diseases have long been recognized by industrial physicians as the greatest single source of lost time in industrial employment. Though the physicians could do little in the treatment of them, they believed their examinations might be used for case-finding purposes. That is exactly what has happened, and industrial medicine's multiphasic screening examinations—not merely laboratory tests, but complete examinations—have made a substantial contribution to the health of the adult population. This function of industrial health programs should be more widely known.

The common cold has baffled industrial physicians as well as the whole medical profession. It is suggested that industry might advantageously support more researches into the causes and control of all respiratory infections.

Health and welfare programs as negotiated between industrial management and union labor are in reality non-medical-controlled medical care programs. What is the relationship of industrial medicine to these? What should industrial medicine do about them?

Management health programs are really examination programs, in fact, very complete health examination services. Industrial physicians do not yet agree on the extent to which they should participate in such programs, and that is a very important matter to determine.

A FEW other topics which now seem to be important enough for consideration by this group are:

5. The integration of psychiatric treatments with rehabilitation of industrial patients.
6. Artificial respiration by the back-pressure arm-lift method.
7. Treatment of chronic pulmonary disease by intermittent positive pressure breathing.
8. The general adaptation syndrome.
9. Changes in blood pressure standards and effects on employability.
10. The changing status of industrial nurses.

These topics relate more to purely medical situations but they have industrial medical possibilities important enough to justify this Discussional in considering them in deciding what's important in industrial health programs.

The integration of psychiatric treatments with rehabilitation is something industrial physicians have almost always advocated. Pioneers in physical medicine, they have seen the softening effects on injured employees of compensation awards combined with overtreatment by physical methods. In reality, they were among the first to use productive employment as a form of therapy; and they know that to persuade an injured employee to stay on his job or return to it when he can do so safely is an excellent expression of psychiatric treatment combined with physical methods.

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Artificial respiration by the back-pressure arm-lift method is of unusual interest to industrial health departments, and all who are engaged in the medical and safety organizations are rapidly perfecting themselves in it. It is a new method.

Treatment of chronic pulmonary diseases by intermittent positive pressure breathing is a subject of great interest to the physician in industry who has a silicosis problem. This method of treatment has the appearance of being revolutionary, and it is yet to be employed guardedly, but it seems to improve pulmonary drainage and alveolar ventilation.

The general adaptation syndrome is a term applied to the response of the body as a whole to stress. It is a defense mechanism which automatically follows physical and emotional outbursts associated with stress. Over protracted periods of such exposures it results in chronic fatigue or exhaustion and then assumes industrial medical importance. How can the industrial physician recognize the adaptation syndrome, and what can he do about it?

Changes in blood pressure standards which recognize higher normals may permit industrial physicians to widen the zones of employability for hypertensives. This is a matter of much practical interest in industrial health.

The changing status of industrial nurses is a broad subject and an important one. It concerns particularly the possible substitution of standard procedure for standing orders in small industries in which the nurses look to part-time or on-call doctors for their authority.

The Worker's Environment

DR. CAREY P. MCCORD talked on "The Workers' Environment": Just what is the worker's environment? At best, any employer would enjoy employing only a candidate's muscles, mind, loyalty and energy. Actually, he employs a great deal more—the candidate's habits, neuroses, ill health, home life, heredity, worries, debts, discords. A worker who has been on a binge might be disturbed by the environment's green wall when otherwise that greenness would be inoffensive. All such items are so clearly brought into the work place and parked nearby, that, conceivably, all become part of the working environment. Further uncertainty attends such matters as the medical department, the safety department, as a part of the environment itself. While such things usually are referred to in terms of persons, as the safety engineer, or services, as the medical department, is it not reasonable to say that any sizeable industrial plant without a needed medical department or safety department is lacking in the desirable features of a good working environment?

Changing Physiques

WHILE not altogether new, the realization is about to come that many of our industrial and household tools, appliances, and work points do not fit the size of the worker. Although still there are large numbers of standard physiques, it is becoming undebatable that the oversized workers are far too numerous to be ignored or to be set aside as monstrosities. For the tall worker, the coat rack leaves his overcoat dragging on the floor; mirrors in the washroom reveal only his neck; when he stands up he squats to see his face; drinking fountains seem to have been designed for 10-year olds; when he travels the hotel beds are too short; when he seeks coveralls or shoes, all are likely to be too small; when he rides in an automobile, he bumps his knees on his ears and jackknifes to see the red light; in his recreation, he dodges the theater because of miniature seats, hence, one reason for the popularity of television! The work world and the general world were little made for the six-foot-six individual, and now he is not a rarity; he is common but he has to adjust to the standards of size of about 1870. Has the time not come when, on a nation-wide basis something may be done for the comfort of the longfellows and the longladies?

Synthetics

DERMATOLOGISTS over the land are protesting vigorously that they are being overworked from the care of skin conditions traceable to the action of synthetic detergents, chiefly in the household. While the household is an industry in itself, it may be accepted as inevitable that in addition to hand cleansing in industry wider industrial application will arise calling for appraisal (china—girdles—elastic). Do we now know enough about these synthetics to be able to list the acceptable ones and to tag the bad ones?

Mixed Exposures

FOR TOO LONG a time it has been assumed that every component in a mixed exposure would do no more harm than if present alone. An eye opener is coming in the realization that at least on occasion synergistic action takes place and perhaps nearly always the exposure situation is worsened in the presence of mixed exposures, even when every single component is below the threshold of expectable dangers. For example, trichlorethylene in the presence of carbon monoxide, both in low concentration, may bring about damage in excess of that expected when singly present. It becomes possible that the catastrophes imposed by air pollution result from the synergistic action of two or more components. Perhaps it is now incumbent upon us to reappraise all work atmospheres harboring contaminants in terms of mixtures. Manifestly this is a little explored area and calls for an extraordinary amount of investigative work. As a generality as to gases and vapors, it may be stated that wherever a mixture has been investigated the total action exceeds that expectable from its parts.

Noise

MUCH has been said recently about the unwanted impact of noise on people. For a long time noise has been labeled only as an undesirable part of the environment of workers and other people. By tradition, noise has been relegated to a minor place on the trouble list. Now this industrial hygienic stepchild threatens to call upon industry to brace itself. It may become the next big onslaught on industrial funds, chiefly centering about partial deafness. While we still do not always know enough to discriminate between just and unjust situations, we do know how and where noise is produced, and we do have near standards.

The Household as an Industry

IT IS ABOUT to be discovered that the household is an industry in itself, and that the housewife is engaged in the nation's most widely distributed industry. Mostly, it now seems obvious that if the

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housewife's actions are fully appraised, she should be furnished a safety supervisor, endless safety devices, protective garments, shorter hours, and more pay! She lives in a world of fire, electricity, and poisons. A rebellion of housewives may be just around the kitchen corner!

New Worlds for the Safety Engineer

IT IS BECOMING apparent to the safety world that the requirements of mechanical safety, except on a routine and maintenance basis, are on the wane. By no means does this even suggest that the safety engineer approaches lessened usefulness. Just the opposite is true. He is actively beckoned. More and more the safety engineer must know and apply industrial hygiene, must better understand people, their motivations, their mental quirks and kinks. All this implies closer teamwork between all members of the occupational health team: the safety engineer, the doctor, the nurse, the employment manager, and the industrial hygienist. The Institute of Industrial Health here at the present time but perhaps only temporarily is disposed to see such overlapping between industrial hygiene and expanding activities of industrial safety as to make these two fields one, or nearly one.

The Inevitability of a Changing Environment

ONE OF the inescapable things in life, along with death and taxes, is the certainty of change. In all of occupational health work including safety, too often there is the assumption that changes will not occur, that innovations are few and far between. There is nothing new about this, but there should exist a new awareness that, in this period, environmental changes are occurring with such rapidity that new and inexperienced exposures may be thrust upon us weekly or monthly. Many persons in our field directly in industry little know their own environment. Recently, in an outstanding industrial establishment with good medical and industrial hygiene facilities, it was observed in the foundry that a supply of graphite was being applied in molds as the parting agent. With some satisfaction, the guiding physician in charge stated, "Of course, graphite is entirely harmless." What do you overlook? In his environment that particular graphite in use was a crude Mexican mineral which contained upward of 35% free silica as an impurity. This is the sort of surprise or unexpected newness that calls for no basking in the belief that the environment once appraised always will remain free from exposure. Few of us realize that on the average, a brand new troublesome occupational disease is arising at just about the rate of one a work day.

X-Ray Exposures in Dentistry

A SUPERB opportunity exists to lean on industrial dentists for guidance in connection with two items of comparative newness. The first relates to the common use of the x-ray in dental diagnosis. In the past few years disturbing exposures to x-ray have been disclosed in shoe stores in which some shoe fittings were accompanied by fluoroscopic demonstrations. In part, such practices may constitute only showmanship in shoe selling. This is not the case in connection with the dentists' use of the x-ray, but the question arises whether the dentist and his assistants are being harmfully exposed in this practice.

Possible Exposure in Abrasive Dental Excavation

STRIKINGLY new is that innovation in the dental world, abrasive dental excavation. Both scientific and lay publications have attracted wide attention to it. Without being competent to appraise the merits of the procedure, it is still incumbent upon us to inquire as to the possibilities of damage to the operator and, less so, in terms of our own interests, the patient. It is known that the abrading substance is aluminum oxide. Always labeled as relatively harmless in provoking any pneumoconiosis, unfortunately aluminum oxide contains a low percentage of free silica. What about the remote likelihood of occupational exposures for the operator and, possibly, non-occupational exposures for the patient?

Allergens in Industry

WHILE not new to industry, there is a new realization that many of the occupational ills traceable to work sources, spring, not from direct contact and, in the case of the skin, primary irritation, but from sensitization factors. This problem looms so large that it will not be a matter just for the doctor and nurse, but for the entire team. Even beryllium poisoning may be a matter of allergy.

Pulmonary Emphysema

DR. HENRY RENFERT, JR., outlined the "Modern Management of Pulmonary Emphysema": The etiological, pathological, physiological, and morphological changes of pulmonary emphysema were discussed. It was suggested that therapy be directed along the following channels:

1. Increasing diaphragmatic excursions by: (a) Burgess-Gordon phrenic belt, or (b) abdominal pneumoperitoneum; (c) retraining the patient to use diaphragmatic breathing.
2. Bronchodilators in the form of vaponephrin inhalations and aminophyllin or ephedrin preparations orally are employed. Coughing by the patient is encouraged. Self-pressure on the lower chest will aid in the release of the increased "trapped" residual air.
3. Antibiotic therapy when infection is present. Every effort should be made to avoid indiscriminate use of antibiotics, but when indicated, after culture, the physician can choose the logical antibiotic.
4. Intermittent oxygen therapy, which has recently been demonstrated to be promising.

It was noted that in the case of the silicotic, plus pulmonary emphysema, there was the additional problem of pulmonary fibrosis.

Industrial Hygiene

WARREN A. COOK summarized the Hygiene and Safety sessions as follows: Industrial health exposures in the manufacture and use of insecticides was the first topic. Today there are being introduced insecticides far more toxic than any that have come before. Probably the most toxic are the organic phosphates. We had represented in our resource personnel a safety engineer, part of whose duty it is to assure that a variety of insecticides under manufacture and also while being mixed with inert materials are handled in such a manner that employees will not be injured by them. By a combination of enclosure and exhaust ventilation, personal protective devices, and education,

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these operations have been carried on at these plants with no injury to health. This is a real accomplishment, one not matched by all plants handling such materials.

IN DISCUSSING the use of insecticides, DR. FREDRICK pointed out that electrically-heated vaporizers are being supplied with one of the newer ones, benzol hexachloride, widely used as a fly-killer. These are effective in killing flies if a sufficient amount is vaporized, but there have been three cases of illness as a result of excessive concentration of this BHC where the vaporizer was used in too small a room. Although we may not be engaged in the manufacture of insecticides, many of us may be using such materials and it behooves us to know what their relative toxicity is. A list presenting such data was recently published by the National Research Council and reprinted in the March, 1952, issue of *Modern Sanitation*. Some 50 of the newer insecticides, their trade and chemical names, and their relative toxicity—many being compared with DDT—are given in this publication.

CONTROL of effluents from air cleaning devices introduced the subject of atmospheric pollution. The industrial hygienists may be successful in protecting employees within the plant but may be throwing outside their plants materials that may cause injury to health in the neighborhod or complaints of nuisance dust or odor conditions. It was learned that new devices are under development at the present time for application to cupolas of brass and iron foundries. An outstanding example of injury to health by effluents from industrial ventilating systems has been the neighborhood cases of beryllium poisoning. Exhaust ventilation was provided so that the employees would not suffer beryllium poisoning, but the effluent beryllium dust was spread over the neighborhood, resulting in cases of beryllium poisoning up to half and three-quarters of a mile away. It is necessary, therefore, that industrial hygienists not only prevent excessive exposure of the worker, but also that they make sure that air cleaning devices are adequate to avoid injury to the health and comfort of people nearby.

DISCUSSION of exposures to commercial x-ray and radioactive materials brought out the fact that today people are still being over-exposed to x-rays. It was believed desirable, not only at commercial and industrial x-ray installations but also at medical x-ray units, that technicians have record of their exposures either by wearing film badges or by dosimeters. There are at least two and possibly a third industrial organization which supply and read film badges. The cost is usually about 50 cents per week per person. The film badges are worn one week and then mailed back to the concern supplying them. There the film badge is developed under controlled conditions, and the x-radiation over the previous week is quantitatively estimated. If radium or other gamma emitter such as cobalt-60 or iodine-121 has been used, these film badges also record the amount of gamma radiation to which the wearer has been exposed. It was suggested that certain other x-ray equipment such as x-ray diffraction apparatus presents opportunity for excessive exposure of the body or the hands. In the latter case, it is desirable to wear a ring containing a film badge. These film badge rings may not yet be available for the commercial suppliers but could be obtained through the local state or municipal health departments which, it was stated, could have such a ring developed through the Atomic Energy Commission. The subject of shoe store x-ray fitting was mentioned, and it was pointed out that there has been only one actual known case of x-ray burns of the feet from using these machines. This case was where a model in New York City had displayed shoes to buyers with x-ray demonstration of the fit day after day.

ON THE SUBJECT of exposure to allergens in industry, it was mentioned that not only do organic materials such as synthetic resins produce allergies, but we are learning also that metals such as cobalt, nickel, and chromium may be productive of allergy, and that the development of beryllium granulomas is in fact an allergic manifestation. One situation was noted where two men are at present hospitalized out of a group of 20 engaged in chromium and nickel plating. Six others have severe dermatitis and allergic manifestations which may be due to sensitization to either chromium or nickel. This is an unusually high incidence of such cases, and investigation is in progress as to the true cause and the method of prevention.

THERE was considerable discussion about the recirculation of air used for exhaust ventilation purposes back into a plant after it has passed through cleaners. Several factors are involved. We used to think that the largest factor was the saving in coal, as it requires much heat to replace the air that is taken out from plants by exhaust ventilation systems. Other factors, however, are even more important. One of these is the flexibility obtained through small units which can be moved from one point to another as machines are rearranged. It was believed that wherever recirculation is convenient and involves only the nuisance dusts such as iron dust from a drilling operation, or grinding dust in those cases where the dust is comprised of iron and aluminum oxide or silicon carbide, recirculation is in order if proper cleaning equipment is provided. However, it was the general thought that toxic dusts should not be recirculated excepting in special instances where it can be rather definitely ascertained that the amounts of such dusts returned to the workroom atmosphere would be well within toxic levels. One operation was mentioned where dust containing lead compounds is swept up with a portable vacuum cleaner. The exhaust from such a vacuum cleaner is, of course, returned through the collection bag to the workroom air. Though industrial hygienists do not like to condone the return of such air to the general atmosphere, they do feel it is probably better to use a vacuum cleaner than a brush or broom for removal of lead dust from the floor. One instance was cited where analyses of the air in the effluent from the vacuum cleaner bag disclosed that when the bag was in good condition, the cleaned air did not contain excessive concentration of lead dust. Also at some operations involving silica dust exposures, the air is being returned to the workroom after passing through dust collectors. Where that is being done, it was believed that dust de-

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terminations of the effluent air should be made not only at the time of installation to make sure that the dust-cleaning equipment is adequate but also at various periods to make sure that the maintenance continues to be satisfactory. It was noted that where some years ago the state departments strictly forbade recirculation of air from any toxic dust exposures, today a number of them are beginning to look at the individual application and, if the industry can prove that the air being returned is not injurious, consider its recirculation permissible. Thus, the present trend is toward more recirculation of air, but this involves installation of adequate collectors and closer attention to proper maintenance, with demonstration by air analysis that the system is operating satisfactorily.

THE matter of combined effects of exposures to more than one toxic material at a time is arousing thought these days. In addition to comments on the animal experimentation reported by Forssman showing that the effects of trichlorethylene vapor were exaggerated in the presence of carbon monoxide, clinical observations were presented concerning men working in the presence of moderate but not excessive concentrations of naphtha being somewhat nauseated by the gases from exhausts of automobiles in the garage where this naphtha was being used. When a less volatile naphtha was substituted, causing decreased exposure to this hydrocarbon vapor, these symptoms no longer occurred. It was believed that neither the initial naphtha exposure nor the gases from the exhausts would alone have produced the symptoms but that the two together produced the effects observed.

IN THE limited discussion on noise, it was suggested that something more quantitative was desired than the general opinion that one operation was obviously noisy and another not so noisy. And even though frequency analyzers are important to a complete study of a noise condition, why not have a noise-level meter which admittedly does not give the noise levels at the various frequency bands, but will indicate whether the over-all noise level is 90 decibels, or 100 decibels, or 80 decibels? Why not just pick out of the air the proposition that we don't want more than 90 decibels, or possibly 95 decibels, and use such an over-all level as a guide in trying to control excessively noisy conditions? Others, however, suggested that a given noise condition might be at a low frequency where a 90- and 95-decibel level would not be injurious, and at such an operation the results of the noise level meter would not be a satisfactory criterion. The response was that most of the noise conditions in industry were fairly high or middle frequency noises, where the 90-decibel or 95-decibel level would be close to the threshold of injury. However, there was no agreement on this controversial subject of permissible noise levels. The whole discussion was, of course, entirely an informal expression of opinions. It was felt that all should be cautious in acceptance of any sort of noise level as being a standard above which injury would result, and below which no injury would occur. All did agree that, even without standards, the problem of noise control should be attacked and, wherever it was possible to quiet excessive noises, work should be done to this end. There are many noisy conditions that are not readily solvable, but much has been and is being done in noise control measures.

DR. ELSTON BELKNAP told of an interesting situation where sodium pentachlorophenate had been used as a fungicide in a brewery. Men were cleaning brewery scale from the inside of a tank while other workers were spraying the fungicide in the general area. On noting the rather irritating mist drifting into the tank, these men got out and worked elsewhere. A week later, one of them developed a bronchitis and went to his doctor who used penicillin inhalation. Shortly thereafter, he developed severe pulmonary edema, and was referred to the hospital where his respiration was found to be 45 to 50 per minute. Oxygen was administered, together with blood transfusions, with little improvement. ACTH was then given and, within 18 hours, his respiration was well down, and within 24 hours he was discharged from the hospital. Rather than the sodium pentachlorophonate being the cause of the trouble, as had been assumed, DR. BELKNAP noted that this was almost certainly an allergic manifestation from the penicillin, with its characteristic relief by the ACTH. This case was presented as an example of the desirability of learning the real facts rather than jumping precipitously at conclusions on the sole basis that there had been some presumably injurious occupational exposure.

AS THE final subject, MISS ESTHER KILMER presented an excellent discussion on the general proposition that it is most important for the nurse to be kept informed about injurious materials being used in manufacturing plants, so that she may learn of any symptomatology that may develop among workers who are exposed to such materials. MISS KILMER noted that in one plant, urine was being analyzed for lead. Also, BA's were made regularly, but results were not reported to the nurse. In fact, she was kept in the dark concerning the entire situation. A man was hospitalized on account of lead poisoning, and the nurse's first intimation of this was through one of the workers. Even then she felt she shouldn't approach management about the condition, as such action could cause embarrassment to herself or to the worker who had brought the information to her. MISS KILMER urged that management should be induced by engineers, by industrial hygienists, and by industrial physicians to keep the nurse informed concerning the potentially injurious materials that are found in the plant. Only when she is so informed can she properly interpret such beginning symptoms as may come to her attention, and refer them to her medical advisers.

IT WAS noted that in all too many plants matters concerning potential hazards are kept under cover. There is the fear that compensation claims or disturbances in industrial relations will develop if it should become known that a potentially hazardous material is being used. There was general agreement among the group at the Discussional that new efforts should be made to educate employers to bring these things out in the open, recognize them for what they are, and, by so doing, avoid hysteria but still retain a proper respect for the potentially injurious materials and operations.

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Date _____

I wish to recommend a physician* for membership in the INDUSTRIAL MEDICAL ASSOCIATION. I (have) (have not) discussed this application with him.

Signed _____

Address _____

*Name _____

Address _____

City _____ State _____

Date _____

I wish to apply for membership in the INDUSTRIAL MEDICAL ASSOCIATION:

Name _____, M.D.
(First) (Middle initial) (Last)

Number and Street _____

City _____ Zone _____ State _____

IF YOU wish to recommend a physician for membership in the INDUSTRIAL MEDICAL ASSOCIATION,

OR

IF YOU wish to apply for membership in the INDUSTRIAL MEDICAL ASSOCIATION, please fill in, tear out, and mail to the District Counselor nearest you, as shown on the reverse side of the card.

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227 Sixteenth St., Denver, Colo.
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210-A N.E. Oregon St., Portland 14, Ore.
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1040 Beaver Hall, Montreal, Quebec, Canada
(Eastern Canada)

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Imperial Oil Ltd., Sarnia Refinery
Sarnia, Ontario, Canada.
(Mid-Canada)

29—
(Western Canada)

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INDUSTRIAL MEDICAL ASSOCIATION

The President's Page

EACH year the Industrial Medical Association bestows four awards to honor four distinct phases of activities in the field of Industrial Medicine. Fellows and Members of the I.M.A. are eligible for three awards on an individual basis, and the fourth is bestowed on an Industrial Medical Service and indirectly honors the physician directing this service. The responsibility of selecting the recipients for these awards is delegated to four committees. These committees are appointed by the President, but they act entirely independently and without advice or influence from the officers of the Association. The awards are bestowed on the honored recipients at the annual banquet.

THE KNUDSEN AWARD is the highest honor that may be bestowed on a member of the Industrial Medical Association. The award is made to the physician who has made the most outstanding contribution to the field of Industrial Medicine during the current year. This contribution may be in any phase of Industrial Medicine, scientific, administrative, or educational, in so far as this activity ultimately contributes to the advancement of Industrial Medicine. The history of this award was recently reviewed in *Industrial Medicine and Surgery*. Several attempts have been made by the Knudsen Award Committee to set definite standards to determine the recipient of the award, however, it must be decided on an individual basis by evaluating all of the factors in each case. Recently, DR. HAROLD A. VONACHEN, Chairman of the Knudsen Award Committee, requested that all Fellows of the I.M.A. assist the committee by suggesting individuals to be considered for the award. The Committee will appreciate this assistance in order that no one may be overlooked during the review of those eligible. The Committee spends a great amount of time, and very careful deliberation before reaching a decision.

THE AWARD FOR MERITORIOUS SERVICE is recognition for an individual's contributions to the activities of the Industrial Medical Association. The recipients in the past have been individuals who have devoted an unusual amount of energy and effort to the Association. This award is bestowed on the individual who worked beyond the usual call-of-duty for the good of the Association. In contrast to the KNUDSEN AWARD which, as stated above, is for an outstanding contribution to the field of Industrial Medicine, this award is to honor the individual who has devoted great service to our Association.

The HEALTH ACHIEVEMENT IN INDUSTRY AWARD and the AWARD FOR MERIT IN AUTHORSHIP were originated by and are sponsored by the publishers of *Industrial Medicine and Surgery*. It was their desire that these Awards be bestowed by special committees of the Industrial Medical Association, and that the sponsorship should not be emphasized. Both of these Awards are designated by beautiful parchment plaques of artistic design which would compliment any office.

THE HEALTH ACHIEVEMENT IN INDUSTRY AWARD is made to the organization which has shown the most outstanding advancement in its medical service during the past year. Both large and small organizations are considered for this Award. This is not a measurement of the physical facilities, but it is a true evaluation of the service which reaches the individual employee of the organization. The Committee bestowing this award has a tremendous task because it is humanly impossible for its members to review all of the Industrial Medical Services. They do receive some assistance from the District Counselors; however, they will welcome suggestions from any member in regard to a medical service to be considered for this Award.

THE AWARD FOR MERIT IN AUTHORSHIP is to honor the individual who made an outstanding contribution by writing about some phase of Industrial Medicine. The fairness involved in granting this Award can best be illustrated by the fact that not all of the winning articles have appeared in *Industrial Medicine and Surgery*, nor is it necessary that any of them so appear. Articles published anywhere are eligible for consideration. The Committee for this Award acts in an impartial manner and should be commended for its past work. Our thanks should be expressed to the publishers of *Industrial Medicine and Surgery* for originating and continuing these Awards.

E. A. Irvin, M.D.

President, I.M.A.

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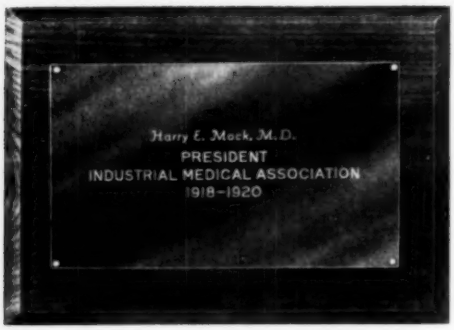
INDUSTRIAL MEDICAL ASSOCIATION

AN ATTRACTIVE plaque was recently sent to every living Past-President of the INDUSTRIAL MEDICAL ASSOCIATION, in compliance with action on a motion at the Executive Committee meeting in Cincinnati on April 20, 1952. Each plaque is engraved with the name of the Past-President and the years of his office as President of the Association. Presentation was made in the name of the entire membership as a fitting reminder of holding such office, and the continued appreciation of the Association for serving in that honored capacity.



THE STATEMENT of "Essentials of Medical-Nursing Services in Industry" as prepared jointly by the American Association of Industrial Nurses, the INDUSTRIAL MEDICAL ASSOCIATION, and the Council on Industrial Health of the American Medical Association, was published on page 306 of the June, 1952, issue of *Industrial Medicine and Surgery*. Reprints of this statement are available to Association members by writing to headquarters offices, 28 East Jackson Boulevard, Chicago 4.

DR. SYDNEY CRAWCOUR, who visited the Association offices in March, 1951, and subsequently traveled extensively in Europe, writes from Victoria, Melbourne, Australia, as follows: "I know you will be interested in learning that I have succeeded in launching a Section of Industrial Medicine in our State Branch of the British Medical Association. We have a strong committee and are expecting to do great things in the not too distant future. This month we have a Commonwealth Congress at the British Medical Association, and it has fallen to my lot to organize the final banquet for nearly 700 people. It will be the biggest function of its kind ever held in this city. I hope it will prove to be as great a success as I am endeavouring to make it."

The Tenth International Congress of Dermatology
— In Relation to Occupational Dermatoses —

JOSEPH V. KLAUDER, M.D.

THE TENTH International Congress of Dermatology was held in London, July 21-26, 1952. DRS. JOSEPH V. KLAUDER and JOHN G. DOWNING, members of the Committee on Dermatology of the INDUSTRIAL MEDICAL ASSOCIATION, attended the Congress. DR. DOWNING, at one of the sessions, showed films on "Dermatoses of Industrial Workers."

Although there was no symposium or discussion of occupational dermatoses, there were some papers pertaining to this subject and reference to it in the scientific exhibit.

Sensitization dermatitis from cobalt was reported among workers in a Finnish pottery works. Sensitization essentially occurred among workers in the clay shops where the wares are formed and cast from different clays mixed with cobalt. Another presentation concerned sensitization to chrome salts and its practical importance. Compounds of chrome stand high in the list of substances causing sensitization dermatitis among industrial workers. This was frequently seen during the last war from zinc chromate primer employed on many metal parts handled by aircraft and shipyard workers. It has long been known that of the metals, chrome, nickel and mercury have the greatest allergenic properties. More recently cobalt and beryllium have been added to the list of allergenic metals.

Burckhardt (Zurich) reported on the buffer capacity of the skin against acids and alkalis and its significance in the pathogenesis of occupational eczema caused by alkaline substances. To determine the function of the skin to neutralize alkali he employs the following test: One drop of 1/80 N sodium hydroxide is placed on the skin and then one drop of an alcoholic solution 1:2,000 of phenolphthalein. This mixture is covered with a glass block, and the time of disappearance of the red discoloration is noted. This procedure is repeated at the same site for 10 consecutive times. In quick neutralization the red discoloration disappears in not more than five minutes; in the mean or average the disappearance requires five to seven minutes; and in slow it exceeds seven minutes. He observed that patients with dermatitis attributed to alkaline substances—cement, mortar, alkaline salt detergents, soap, etc.—showed results predominantly indicative of slow neutralization. This impairment of the skin to neutralize alkali probably forecasts the occurrence of dermatitis and emphasizes the desirability of application of buffer solution to the skin after prolonged exposure to alkaline substances and also the use of acid reacting detergents.*

Dr. E. C. Amoroso, of the Royal School of Veterinarian Medicine, had an exhibit of comparative dermatology. One aspect was diseases of animals transmitted to man, some of which comprised occupational dermatoses, of which mention may be made of the following. Erysipeloid of Rosenbach caused

*Further discussion and comment on Burckhardt's studies are afforded in the paper, KLAUDER, J. V., and GROSS, B. A.: "Effect of Alkali on the Skin. Effect of Soap on pH of Skin." *Arch. Dermat. & Syph.*, 63:1-23, 1951.

Physico-Therapy Section—Medical Department (From an illustration in the brochure "Guiness, Dublin," published by Guiness Brewery)

by Erysipelothrix rhusiopathiae which in turn causes an infection in swine. Erysipeloid of Rosenbach usually occurring as an infection of the hands at site of injury is an occupational hazard of butchers and abbatoir workers. The human form of foot and mouth disease. Milker's nodules—a nodule occurring on the hands of dairymen. It is a virus disease of the skin acquired from milking cows which are infected with natural cow pox. The latter is expressed as papules and pustules on the teats or the udder. Pustular dermatitis of sheep, commonly known as "orf," is another disease caused by a virus. Sheep handlers are infected, commonly the hands, expressed as a papules or small tumor with central umbilication and later suppuration and ulceration.

No one in England has succeeded the late Dr. R. Prosser White, who devoted all his time to the occupational aspects of diseases of the skin. His text, "The Dermatergoses or Occupational Affections of the Skin," is a monumental contribution to occupational dermatoses. This volume recalls the comprehensive discussion and illustrations of "mule spinners" cancer among textile workers in England exposed to shale oil. I was told that although shale oil is still used in England, its carcinogenic action on the skin has been considerably decreased through preventive measures, notably cleanliness.

Medical service under workmen's compensation laws as it operates in the United States does not pertain to England under the National Health Scheme. Interesting conversations were held with a number of dermatologists and others concerned with occupational dermatoses. Mention may be made of Dr. John Ingram, of Leeds, a highly industrialized region of England, and Dr. Sybil Horner, of the Department of Factory Inspection, Ministry of Labor. Dr. Horner has made important contributions in the field of occupational dermatoses. A notable one is the chapter on this subject in the recently published text on "Modern Practice in Dermatology" by Mitchell-Heggs. When I visited her, the number of samples on her desk of barrier creams and hand cleansers was reminiscent of the morning mail at home. One of the instructive phases of our conversation was her epigram on occupational dermatoses—"S P I C—selection, protection, inspection, cleanliness."

A highlight in this report on aspects of occupational medicine that I encountered in travel through England, Scotland and Ireland was my visit with Dr. John E. Eustace (arranged through Dr. Edward Holmblad), Medical Director of Guinness' Brewery, Dublin. Dr. Eustace's graciousness was equal only to the excellent noon meal (of course including Guinness bass) to which I was invited, served in the clinic.

Guinness Brewery, the largest in the world, employs about 3,600 persons. Complete and free medical service is extended, however, to a considerably greater number including dependents of employees, widows, and pensioners. The Medical Department, founded in 1870, now embraces a staff of four physicians, two dentists, two pharmacists, nurses, laboratory technicians, clerks, a masseur, and a welfare superintendent. All of the aforementioned beneficiaries call at the clinic for medical service. In the event of their inability to attend, one of the medical staff visits their home within a circumscribed area. One of the medical officers resides in the clinic and is available for night calls. A consultant surgeon visits the clinic weekly. Patients are referred to the offices of other consultant

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specialists. Maternity and other patients are hospitalized or sent to convalescent homes; the maintenance charges are paid by the company. All medicines, including antibiotics and cortisone, are furnished free, including many appliances. There are some exceptions to the latter; for example, dentures are supplied on an easy payment system by means of loans. All these benefits are provided at the expense of the company, and the employees are not asked to contribute toward the cost. In cases eligible under the National Health Scheme where the amount of benefit does not cover the total cost of treatment or appliance, the company pays the difference.

The many rooms I was shown in the clinic for treatment and examination were comparable to those of a general hospital—x-ray, electrocardiogram, physiotherapy, etc. I witnessed the administration of pneumothorax in treatment of pulmonary tuberculosis. I was told that tuberculosis was one of the outstanding health problems of the employees. The company maintains eight beds in sanatoria in the country for patients suffering from tuberculosis. Another patient was receiving treatment for intermittent claudication. A new apparatus was used, similar to the one used on the late King George VI. A daily treatment of one hour was administered; prior to this therapy the patient could not walk 20 yards without pain but now could walk two miles.

Occupational dermatoses were infrequent; occasionally sensitization dermatitis to malt was observed. The most frequent one was dermatitis of the palms from wet work, supplemented by trauma incident to rolling beer casks by means of the palms.

An interesting human aspect was Dr. Eustace's statement that all the employees have great confidence in the medical staff and regard them as their friends, their traditional family doctor, and consult them in all problems remote from occupation. In a comparable manner the medical staff is concerned with the employees' welfare, and is empowered to recommend to management an increase of pay if circumstances warrant.

Dining rooms are provided, where a staff of cooks and attendants is maintained at the company's expense. In these rooms breakfasts, dinners and teas are served at very moderate charges. Workmen are supplied with meals free of charge when engaged on work of a special nature. Motor drivers and others on early duty are provided with breakfast. All messenger boys and boy laborers are supplied free of charge with a substantial meat meal in the middle of the day. Free dinners are also supplied to the sons of widows and pensioners who are attending school in the neighborhood.

The company's interest in the welfare of the employees is evidenced by the appointment of a Welfare Superintendent who, among other duties, takes charge of the widows and orphans, visiting them regularly and keeping the Chief Medical Officer in touch with their condition and needs. Other phases of welfare include a sickness plan whereby a certain percentage of wages is paid and, in certain circumstances, full pay is granted. A savings bank is conducted by the company, also a building society and life insurance on exceptionally favorable terms. Loans are granted free of interest by the company on the recommendation of the Chief Medical Officer. A pension plan, and educational, recreation and athletics unions are sponsored by the company.

The Medical and Welfare set-up of Guinness Brewery impressed me as the ultimate in occupational medicine. Dr. Eustace informed me that he knew of no similar plan in Europe; the only comparable one to his knowledge was that of the Birmingham Brick Company, Birmingham, Alabama, U.S.A.

As the plane I boarded in Shannon roared toward the setting sun, I regretfully left the Emerald fields of Ireland, the friendly "Bon Voyage" of my medical confreres and their "hope to see you in Naples in 1954" resounding in my ears.

BOOKS

Clinical Pathology

A TEXTBOOK OF CLINICAL PATHOLOGY: Edited by SEWARD E. MILLER, M.D.; The Williams & Wilkins Co., Baltimore, 1952; pp. 1048, $9.00.

ONE reason for reviewing this text on general clinical pathology relates to its Editor, DR. SEWARD MILLER, Chief, Division of Occupational Health, U.S. Public Health Service, in Washington. This type of publication earlier was designated "clinical microscopy." All physicians readily would anticipate the contents of a book so designated. Manifestly, that old title is not fully serviceable. Equally true, the current term "clinical pathology" is not fully revealing. On a language basis, there is no justification for the term "laboratory pathology," but this is just what this book is—many things that may be done in the laboratory that contribute to precise diagnoses. The scope of this large book is still amazing. Omitting all sub-sections, some of the large headings are: Blood Techniques; Bone Marrow Examination; Hemorrhagic and Thromboembolic Diseases; Diseases Primarily Affecting Leukocytes; Blood Groups; Blood Chemistry; Liver Function Tests; Renal Function Tests; Immunologic Tests; The Assay of Chemotherapeutic and Antibiotic Agents; Viral and Rickettsial Disease; Parasites—only about half are mentioned.

This publication, and other new ones like it, so serviceable in the laboratories of hospitals and physicians' offices, still partly live in the past, or perhaps it should be said that they cling too closely to laboratory traditions as to scope. For example, a small but acute need exists for hospital facilities for examinations related to industrial exposures: lead in urine, lead in blood, urine sulphate tests for benzol exposure, arsenic determination in hair and nails, etc., etc. Rare is the hospital laboratory that engages in such enterprises. With DR. MILLER as Editor, it might have been hoped that this distressing deficiency would have been eliminated—at least to the point of technique instructions. The eager look yielded nothing.

Medical Adventure

PHYSICAL DIAGNOSIS, by HARRY WALKER, M.D. The C. V. Mosby Company, St. Louis, 1952, pp 432, $8.00.

BACK behind industrial physical examination lies physical diagnosis. The physical examination, in terms of publication, has become a mountain

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with triple peaks—pre-placement, periodic, and exit examination. Somehow or other, physical diagnoses have become hidden on the far side of the physical examination mountain. And yet, every physical examination involves physical diagnosis. Endless physical examinations have become just chores, routine, a thankless task, drudgery. They shouldn't be that way. There is no such thing as a wholly perfect physical speciman. Every physical examination could be a small adventure—observation of endless deviations from the usual. Even when these deviations are inconsequential to work placement, the physical examination should be more than a mere inspection to rule out amputations, stiff joints, one-eye blindness, or hernia. Capacity to find adventure in pathologic deviation requires alertness and acuteness in physical diagnosis. Familiarity with the contents of this book would guarantee an endless lot of physiologic adventures and oftentimes revealment of truly significant items always important to the examinee as an imperfect human speciman and sometimes important in the worker's future as an employee. This book, while far more than a listing of observable and detectable items, does provide a listed array of abnormalities, organ by organ, system by system. For example, 17 items indicate that in the physical examination, the tongue should not be passed over with a second's glance. Let it be assumed that an examinee's tongue presents a fiery red border and tip with indentation corresponding to the contour of the teeth at points of contact, that the papillae are atrophied, that tiny denuded areas appear on the tongue border, and that the examinee complains that his tongue is sore and that salivation is present and disturbing. What is the answer? All that is not casual, even though all that may be noted in a few seconds. The examiner faces a diagnostic adventure. Pellagra is present, or at least is suggested.

This good book provides opportunity to remove humdrumness and drudgery from industry's numerous physical examinations. The examiner will become a better one knowing this book; the examinee may better learn of his physical state; the employer better will be guided to proper job placement. This book affords transportation to an improved quality of physical examination.

Carcinogenic Compounds

SURVEY OF COMPOUNDS WHICH HAVE BEEN TESTED FOR CARCINOGENIC ACTIVITY: Second Edition. JONATHAN L. HARTWELL, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; pp. 583, $4.25.

THIS book is a compilation of all available literature dealing with experimental investigation of carcinogenic properties. The Public Health Service emphasizes that it is not the primary source of information provided. By implication, the validity of some inquiries is held up to question, and a number of pitfalls that readily might have influenced results are mentioned. Thirteen hundred twenty-nine chemical compounds were examined, of which number 322 were reported as causing malignant tumors in animals, and 35 others, benign growths. This ratio conforms to the findings encountered in the prior study which ended in 1939. The data on the 1329 compounds are published in tabular form in alphabetical fashion within several categories. The tabulation cites the reference, the type and number of experimental animals, the sex when mentioned, the chemical preparation and its method of application, the number and type of tumors resulting if any, the duration of the period of observation, and the state of animals surviving. While a large number of investigations with positive findings resulting from the application of thorium compounds provokes no astonishment, it is surprising to encounter the report that sodium chloride, in relatively high concentration, (up to 25%) occasionally is associated with sarcoma in rats.

This book is not for light reading. It is strictly a reference guide. But, should any industrial physician have reason to inquire if "a-isopropyl-3, 4-benzphenanthrene" is known to be a cancer producer, he may find that it is, and that at least three investigations on such properties have been conducted. So, also, he might explore any others in the total listing. It does not follow as proved, that human cancer is prone to follow exposure to all of these 322 compounds that have produced malignant new growths in animals.

Neuroses

THE NEUROSES: WALTER C. ALVAREZ, M.D., Emeritus Consultant in Internal Medicine, Mayo Clinic, Emeritus Professor of Medicine, University of Minnesota, Mayo Foundation. W. B. Saunders Company, London, 1951, pp. 667.

AFTER reading a few sections of this book, the mild suspicion arises that the author might have been influenced by the caricature drawings of the artist, Steig. Steig's grotesque cartoons bear such labels as "Woman Desiring to Attract Friendship," "Man Who Wants to Be Pitied," "Man Who Wishes Not To Be Forgotten." Along comes Alvarez in realistic verbal portrayal of such types as "The Man Who is Resentful and Upset Because He Feels He Has Failed," "The Person With Restless Legs," "The Woman Who Hugs Her Grief." Without having consulted the publisher, gratuitously the observation is made that had Alvarez and Steig collaborated, such a best seller would have been achieved that never might this copy on hand be made available for any review.

A small jury was utilized, including some of the laity, for appraising this book. All came running back declaring "This is it; even I can understand it!" That understandability will prove to be a shock for the functional psychiatrists who, thereby, are robbed of major portions of their horrendous mumbo-jumbo sacred to themselves. In reprisal, they are prone to label this book, at least in spots, as being "unsound," or, more generously perhaps, "oversimplified." The author, at the outset, gently threatens to assail portions of the medical profession and some of the things its practitioners believe and do. This assault scarcely materializes. The yip is severer than the nip!

The undeniable worth of this publication springs from the fact that the author is guided by many years of astute activities in the realm of internal medicine. Well this text might have been entitled "The Internist's Appraisal of the Neuroses." This is no lay, popular psychological treatise, but all intelligent members of the public might profit by a reading. Addressed to the physician, it is a splendid

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guide to getting along with and helping individuals with mental kinks, quirks, and crotchets! The general flavor is suggested by a few section heads: "Nervous Heredities," "Marriage as a Cause of Neuroses," "Homosexuality in Men and Women," "Migraine," "Neuroses of the Nose and Throat," "The Tactful Handling of the Nervous Patient," "The Psychosomatic Problems of the Child." The author well realizes that many mental states far exceed the boundaries of the neuroses, since due consideration is given to "Commitment Procedures." By iteration, it is recorded that this practical book achieves much of its stature from not having been written by a psychiatrist but by an author wealthy in experience in the totality of internal medicine.

German War Medicine

GERMAN AVIATION MEDICINE WORLD WAR II; Two volumes, pp. 1302, prepared under the auspices of the Surgeon General, U.S. Air Force—Department of the Air Force. Sold by the Superintendent of Documents. Sold only as a set, $8.50, U.S. Printing Office, Washington 25, D.C.

LONG it has been suspected that darkly buried within military archives, are investigational records with results applicable to distinct gaps in industrial medical knowledge. Their unavailability long after the termination of World War II, probably is unrelated to inertia on the part of military personnel, and, instead, wholly may reside in the lack of information that release and publication would serve useful ends.

These two volumes under review prove the point. At the end of the last great war special teams of experts in the United States Air Force, ransacked nearly every German university, laboratory, and military installation where research had been conducted in aviation medicine. It seems likely that this effort was but one aspect of a total inquiry to determine research findings in support of the Luftwaffe during the war. Tacitly it would appear that the objective was to determine if the Luftwaffe was far ahead of this country in its aviation developments. The "pros and cons" of any such objective are of no concern to this review, but the general findings must have been highly productive since medical findings alone fill two large volumes.

These tomes encompass all aspects of medicine as applied to aviation, such as requirements of high altitude flying, acceleration, problems of heat and cold, blast effects, etc. One only may be mentioned in particular. It so happens that this Journal and much of industry at this time are concerned with the effects of mechanical vibration from heavy vehicles, such as tanks, tractors, heavy trucks, motorcycles. Data are scant, but along comes this governmental publication based on the research of the aviation of a conquered nation. The disclosures are salutary.

Volume II, part 7, is dedicated to the topic of "Vibration" and embraces nearly 100 pages. One section is specifically devoted to "The Physiological Effects of Mechanical Vibrations," while others are devoted to such as noise, measurement of vibration, threshold stimuli, etc. No precise details properly may appear in a condensation for an over-all review. The general statement may be made that much information is disclosed, significant to the well-being of every farmer who drives a springless tractor, or any other driver or rider of a rough jolting vehicle. May it be hoped that the military forces of the land through their high offices will deem it proper to release more and more such publications, even when there may be no full comprehension as to the non-military ends that helpfully may be served thereby.

LETTERS

"The Pure and Perfect Atmosphere"

TO THE EDITOR: Our early doctors laid much emphasis on breathing "good air" and they would have been scandalized to know there was such a thing as "smog," or that our large cities have so much smoke, carbon monoxide, etc., in the air.

Probably Dr. William A. Alcott's own tuberculosis of the lungs made him put so much emphasis on good air. In his "Laws of Health," published in 1856, he writes (page 246): "For our labourers in the open air as well as some of our mechanics I know of no device which will essentially relieve them .... For our labourers in cotton mills, woolen factories, glass factories, it is fondly hoped that human ingenuity will yet find out something to remove the dust and substitute in its place the pure and perfect atmosphere of Heaven. Is such a hope futile? The proprietors of an ivory comb factory in Meriden, Connecticut, some 15 years ago (about 1840) contrived to blow the dust as fast as it was formed so that the operators need not inhale it. Why not as well contrive to blow away cotton dust, woolen dust?"

As Meriden is only a few miles away from Bristol where I live, I went there and found the location of the factory. But I could not find out how the owners contrived to blow the dust away.

On the next page of his book Dr. Alcott writes that dust from metals and minerals is much more injurious when inhaled than common dust, not only to the lungs but to the system in general: "Axe grinders I find to be almost universally very great sufferers from their employment, due to (1) the position of the body, (2) the particles of the steel are sharp, (3) the particles of the grindstone are irritating. It adheres to the lining membranes of the windpipe and lungs. Perhaps pierces it. The irritation must be considerable so serious in the end as to cause ulceration and, when there exists the slightest predisposition to bronchitis and consumption, may end in these diseases. I have seldom if ever found a stonecutter who was healthy. Axe grinders I find to be almost universally very great sufferers from their employment."

He then enumerates several unhealthful trades. I wrote to Dr. Alice Hamilton, pioneer in occupational diseases, and she replied: "I do not know of any effort to protect workers from dusts in this country as early as 1840, and I am astonished to learn of one. As late as 1910, when I first went into industrial medicine I found legal control of 'emery powder,' but not of other dusts. There must have been some unusually humane employers, like the Meriden ivory manufacturers, who of their own accord protected their workers, but the law did not."

These observations of Dr. Alcott are but another example of his keenness in diagnosis.

—ARTHUR S. BRACKETT, M.D.
Bristol, Connecticut.

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The National Sanitation Foundation

THE ENTERPRISES of the National Sanitation Foundation run wider and deeper than its bestowal of seals of merit certification as presented on page 489 of this issue. There for the first time the NSF Seal of Approval, the emblem of commendable sanitary quality, is published. This newest activity of the Foundation speaks for itself as to intent, significance and controls.

But what of the Foundation, its objectives, facilities, organization, sponsors, support, personnel? The National Sanitation Foundation (NSF) is a non-profit organization maintained by the leaders among the manufacturers of wares that require sanitary consideration. It is dedicated to the prevention of illness and the improvement of the quality of American living through an improved environment. Its philosophy is outlined exceeding well in that statement which is becoming more familiar every day: "Sanitation is a way of life. It is the quality of living that is expressed in the clean home, the clean farm, the clean business and industry, the clean neighborhood, the clean community. Being a way of life it must come from within the people; it is nourished by knowledge and grows as an obligation and an ideal in human relations."

IN ITS largest implications sanitation is gigantic. The requirements of good sanitation reach into water supplies, sewage, air pollution, foods, housing, lighting, noise, work places—everything that provides a threat to the good living of the people. The domain of the activities of NSF is far less embracive. It foremostly is concerned with the acquisition of acceptable sanitation for those things intimate to the individual, his food at home and the utensils that contribute to its preparation, his clothes and the appliances that wash or dryclean them, the quality of his food and drink as he partakes at the restaurant or soda fountain. Yearly the area broadens, and no end may be sighted.

NSF is a Cerberus, with one head laudably protecting sanitary manufacturing itself against its own deficiencies and shortcomings; the other dedicated to watchfulness over the public's needs for sanitary excellence. After all these two heads are but one—sanitation. To the credit of the sanitary equipment trades is its determination to be disciplined as to sanitary provisions within itself. Neglect of sanitation always eventuates in necessary but pestiferous impositions by governmental agencies. Wise is the industry that makes that incursion unneeded.

Prime beneficiaries of the NSF activities are the health officials, and usually at the state level. These officials are charged with the responsibility of abating unsanitary conditions and practices of every character. In theory they are required to pass upon the sanitary quality of every machine, utensil, device or instrument that harbors any threat of sanitary affront. Practically, this task becomes an Alpine burden. It cannot be fulfilled to completeness. Long these overburdened officials have indicated that suitable standards produced through authoritative appraisal and applied and lived up to by all manufacturers, would remove their onerous role of sanitary policemen.

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That exactly is the function of NSF—to guide the manufacture of sanitary wares to the end that sanitation becomes part of the product itself. The integrity of NSF in the fulfillment of this object long has been acclaimed by public health organizations at every level. While the public health officials may be spared many of NSF's feckless duties, its ultimate and chief beneficiary is the public. NSF contributes to better living through improved sanitation.

The Foundation's trustees are of high stature—men of vision, determination, and judgment. Its Council of Public Health Consultants comprises experts, of outstanding professional integrity, experience and courage. Its Industrial Advisory Board is made up of top industrial leaders the country over who recognize the obligation of American business to improve the lot of the customer.

NSF is highly favored in its physical location and surroundings. While not a portion of the University of Michigan and financially unsupported by that public agency, it is well integrated into the University's School of Public Health and its programs. The Dean of the school is the President of NSF. This espousal by the University in itself constitutes an earnest that NSF is substantial in its endeavors to contribute to better living everywhere.

Twentieth Anniversary

BIRTHDAYS are feathers in the broad wings of time. In October, 1932, this Journal made its initial bow. In this October, 1952, issue, without fanfare or added features this Journal is preening its wing feathers—20 in number.

In human life, birth itself is the surpassing indignity, the ultimate insult. No child wants to be born. This Journal wanted to be born. Its birth delivery was onto an anvil—the anvil of pursuit, need, opportunity, adventure. If inquiry might be made of this Journal, "What is the single outstanding event of your entire existence?", glibly but not entirely facetiously, the answer well might be, "The fact of our birth." If sturdiness in character always be the product of vicissitude, conquest over the unattainable, refusal to succumb to the mortal wounds of battle, then this Journal has been blest with the ingredients making for stability and integrity. There have been vicissitudes. Now, reaching into its year of majority, still there is no moment for basking, for reclining on the couch of fulfillment. The cry of coming battles fills the ear, but equanimity presides.

The sometimes wicked John Quincy Adams whispered in 1820 to his diary almost in these words, "Journalists are a sort of assassins who sit with loaded blunderbusses at the corner of streets and fire them off for hire or for sport at any passer-by they select." The obligations of this Journal over the score of years marking its life have not included any such pursuits.

"In centuries before ours, the public nailed the ears of journalists to the pump. In this century, journalists have nailed their own ears to the keyhole." That statement was not written in affection; but in pride this Journal admits that in the past and in the present its ears, eyes, vocal cords, and pen are nailed to the keyholes of industrial medicine. That is why it was born.

Fears and Phobias

WITHIN his worker clientele, almost every industrial physician may have detected one or more persons with that strange affliction, a specific phobia. While these conditions are neuroses, and of the anxiety type, the anxiety is not always general but sometimes pinpointed to the point of absurdity. One otherwise hearty-minded individual may harbor an unreasonable fear of screw-drivers. Another's fears may run to cutting compounds, or to glass. These unfortunate beings often become the butt of gibes and sneering of their fellows. To the victim, his condition is real and beyond understanding. Instead of joining in the ridicule, the physician should approach such psychiatric states with all the sympathy at his command.

The lexicographers who provide medical names for everything had a field day in designating the phobias. Here are some: The fear of:

animals—*zoophobia*
being dirty—*automysophobia*
being stared at—*scopophobia*
choking—*pnigophobia*
crossing bridges—*gephyrophobia*
wetness—*hygrophobia*
dogs—*cynophobia*
dolls—*pediophobia*
drafts—*anemophobia*
alcoholism—*dipsophobia*
high places—*acrophobia*
empty rooms—*cenophobia*
enclosed spaces—*claustrophobia*
fire—*pyrophobia*
fur—*doraphobia*
glass—*crystallophobia*
infection—*molysmophobia*
itching—*acarophobia*
lightning—*keraunophobia*
marriage—*gamophobia*
nakedness—*gymnophobia*
sharp-pointed objects—*aichmophobia*
needles and pins—*belonophobia*
odors—*osmophobia*
precipices—*cremnophobia*
railroad trains—*siderodromophobia*
rain—*ombrophobia*
public speaking—*lalophobia*
strangers—*xenophobia*
teeth—*odontophobia*
being touched—*haphephobia*
worms—*helminthophobia*

Looking around a bit at idling, loafing workmen, it would appear, and on a not too pathologic basis, that some are given to ergasiophobia—a fear of work—or possibly ponophobia, a fear of fatigue.

Our own recognized phobias are two in number—phonophobia, a distaste for noise and, pediophobia, a disaffection for squally children. It might appear that there exists a full blown eremiophobia, the fear of quietude and stillness.

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NEWS, COMMENT, OPINION

THE Bible tells of Nehemiah. He said, "Oh King, I want to go back to my home town," and the king said, "What for?" And Nehemiah said "Because the wall has fallen and it is in a rubble and looks unsightly." So he went back and they built the wall. The Bible tells the whole story in just three lines of scripture. It says, "So built they the wall, for the people had the mind to work."

—From an Address by MRS. HAVEN SMITH, in *North Carolina Med. J.*, August, 1952.

The Bomb

THIS period of uneasy "peace" is a time for labor and a time for prayer. Men work to protect themselves and their neighbors against the avoidable panic with its consequent unnecessary death and paralysis of the ability to recover; they pray that the sacrifice of their lives and dearest hopes will not be required of them—and no less that fear, of the known or unknown, will not cause them to be found wanting if trial and crisis occur. The alternative to chaos and the shame of defeat is the will to act and thus to survive.

—From "Freedom from Fear," Editorial in *New England J. Med.*, 247:6 (August 7) 1952.

Disabled

THE number of persons 14 to 64 years of age with a disabling illness or condition in September, 1950, was estimated to be 3,605,000 compared with 4,569,000 in February, 1949. Of those disabled in September, 1950, an estimated 2,206,000 had been disabled for more than three months. The figure for the winter month was 2,300,000.

—From "Estimates of Disabling Illness Prevalence in the U.S." Public Health Monograph No. 4, U.S. Public Health Service.

Hands Off!

A SPOKESMAN for the Texas Manufacturers Association said today that industry was aware of its health problems and did not need help from "any outside agency"—including the government. VICTOR F. GRIMA, of Houston, director of industrial relations of the Association, spoke at a regional hearing of the President's Commission on the Health Needs of the nation. About 20 doctors and laymen from Louisiana, Oklahoma, Arkansas and Texas addressed the one-day meeting. MR. GRIMA said industrial health problems could be solved "effectively only at the industry, company or plant level. No outside agency is qualified to solve the industrial health problems of any particular company or operation."

—Dallas, August 18, (AP), in *New York Times*, August 19, 1952.

Vision Tests

A FREE check on their ability to see is being conducted among employees of The B. F. Goodrich Company plants in Akron, Ohio. Results of tests on a machine called the Sight Screener are studied by the company's Medical Department, and a sealed report is sent to the employee. It states either that the vision test has been satisfactorily passed, or suggests that the recipient would benefit by an eye examination. The service is entirely voluntary.

—*American Business*, April, 1952, in *Notes & Quotes*, September, 1952.

Aspirin

THE Division of Industrial Health in Kentucky recently reported a strange observation which surely is not unique. A garage had informed the Division that its eight or 10 mechanics regularly consumed one bottle of 100 aspirin tablets every week. After an overhead flexible tailpipe exhaust system had been installed, the tablets were not used any more, and after six months the unused bottle was still standing on the shelf.

—*Trucking News*, August, 1952.

Fish Eyes and Cataracts

SHOTS in the arm promise to clear up eye cataracts without surgery, it was announced in *Science*, journal of the American Association for Advancement of Science. Several badly blinded persons have regained "practically normal vision" after a series of the shots. The injections are protein material obtained from the lenses of fish eyes. Just how they act to clear up human cataracts is not yet known. The discovery is announced by Drs. R. F. Shropshire, Jacob R. Ginsberg and Mendel Jacobi of the

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Medical Director: (114) Age, 35; M.D., Wake Forest; four years, USNMC; past six years, Assistant Medical Director large petrochemical Company. Member all industrial medical associations; excellent references.

Medical Director: (115) Age, 42; seven years, Medical Director, Steel Co. of 10,000 employees; three years, Medical Director, of large manufacturer; outstanding man; pleasant; large capacity for work.

Medical Director: (116) Medical Director, past six years, very large industrial company; well qualified to reorganize entire dept.; exceptional references.

Medical Director: (117) Age, 44; M.D., Tufts; 10 years successful private practice of surgery; seven years, Medical Director, leading industrial manufacturer; also consultant important companies in hygiene and industrial medical problems.

Medical Director: (118) Age, 38; five years, Medical Officer; six years, private industrial practice; well qualified in surgery of trauma; three years, plant physician and assistant Medical Director, large industrial plant. Excellent references.

Medical Director: (119) Internist, exceptionally well qualified in industrial hygiene; several years, successful private practice of medicine; four years, Associate Professor, university medical school now seeks industrial directorship with regular hours.

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Appointment as Physicians to Royal Family: (177) (Near East): Must be well qualified, young, able do minor surgery and appendectomies; wife, also M.D., qualified in OB-GYN must accompany; contract; no children; live in palace; hot climate; rather restricted social life; $40,000-$50,000 per annum for both; tax exempt; unusual and very interesting.

Medical Director: (178) New post; to replace two partime men; two plants; important industrial manufacturer; 6000 employees; university city 250,000; East.

Medical Director: (179) To organize State program for the professional care of all prisoners; new post; will have headquarters at State penitentiary; requires outstanding man. University medical school city.

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Medical Director: (181) Large plant; full charge; 10,000 employees; Chicago.

Medical Director: (182) Leading Company; 3500 employees 1000 of which are in general office; attractive city 100,000; pleasant living; East.

(183): Industrial Physician; Hospital of large plantation and private practice; $12,000; partnership, one year; Hawaii. (184): Industrial plantation hospital; also private practice; both will net $15,000; Hawaii. (185): Foreign appointment; leading American Company; general practice, minor surgery; two year contract; good salary; tax exempt; family housing. (186): Coal Company list and private practice; replace physician leaving for residence; should gross in excess of $25,000; new five room house available. West Virginia. (187): Staff; excellent department affiliated with university medical school; 28,000 employees; simple fracture and traumatic care; fine university city 125,000; Midwest.

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Cataract Institute, South Kortright, New York. The usual treatment for cataracts is to cut out the eye lens and substitute strong spectacles. A British surgeon is substituting plastic lenses for the damaged human ones. The injection treatment looks promising, says the report describing treatment of 26 patients. They get three injections a week. In the first 14 patients, the eye lenses became clearer after six shots. After 30 injections, several patients who were nearly blind had practically normal vision, the scientists reported. Most of these first 14 were men and women 60 to 70 years old. Another 12 patients, 34 to 70 years old, also showed improvement from the shots. Fifty more persons are being tested now. The shots have not caused any allergic reactions, or other signs of trouble, the report said. The method first was tested on hundreds of rats suffering from cataracts.

—*Chicago Daily News*, September 12, 1952.

Health Knowledge

IT IS NOT enough to make health knowledge available; the individual has to decide for himself to accept such knowledge and make it part of his way of life. As the physician, through the concept of psychosomatic medicine, has rediscovered the patient, so the public health worker has rediscovered the public he serves by the realization that people are best helped through knowing how to help themselves.

—A. W. DENT, *Public Health Reports*, April, 1952.

None Immune

AMERICAN Business Men's Research Foundation news release says: "Three recognized scientists, Dr. Edwin H. Sutherland, of Indiana University, Dr. H. G. Schroeder, Menard, Illinois, and Dr. C. L. Tordella, of Indiana, after weighing the results achieved by 37 different investigations of personality traits involved in alcoholism, concluded that, 'Any kind of personality—happy, sad, extrovert, introvert—can become an alcoholic;' that 'alcoholism is not determined or related to generic personality traits.'" The finding of these scientists is that tests have not demonstrated that originally alcoholics differed from non-alcoholics. "No satisfactory evidence has been discovered that justifies a conclusion that persons of one type are more likely to become alcoholics than persons of another type."

Civil Defense

TEN articles on "Medical Aspects of Civil Defense," which have appeared in the *Journal of the American Medical Association*, have been reproduced in booklet form by the Association's Council on National Emergency Medical Service. The articles and authors are: "Civil Defense Organization and Medical and Health Services in Civil Defense," DR. JAMES C. SARGENT, Milwaukee; "Medical Aspects of Civil Defense in Biologic Warfare," DR. VICTOR H. HAAS, Bethesda; "Local Tactical Planning and Logistics in Medical Aspects of Civil Defense," DR. PERRIN H. LONG, Brooklyn; "Chemical Defense," COLONEL JOHN R. WOOD, Medical Corps, U.S. Army; "Atomic Burn Injury," DR. EVERETT IDRIS EVANS, Richmond; "Radiological Aspects of Civil Defense," DR. GEORGE M. LYON, Washington; "Atomic Burn Injury: Radiation," DR. CHARLES L. DUNHAM, DR. EUGENE P. CRONKITE, DR. GEORGE V. LE ROY, and DR. SHIELDS WARREN, Washington; "Nature of Air Raid Casualties," DR. CORTEZ F. ENLOE, JR., New York; "Mental Health and Civil Defense," DR. OZRO T. WOODS, Dallas; "Atomic Bomb Injury: Mechanical Injuries," DR. GIORINDO A. SIMEONE, Cleveland. The booklet, which contains 130 pages, may be purchased in single or multiple copies from the Council on National Emergency Medical Service, American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois.

B. O.

IN THESE days of good sanitation, excellent bathing facilities, and deodorants galore, there is no excuse for not ridding the body of distasteful odors. Because the skin and clothing retain the odor, daily bathing, frequent laundering and change in linen are essential. Particular attention must be given to the underarm areas, the groin, and the feet. Keeping the body clean is a must in good grooming. Washing the hair frequently, particularly in hot weather, is another must. Clothes need not be expensive, but there is no excuse for not keeping them clean. There are conditions that

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cause excessive perspiration which stem from underlying factors, such as nervous and emotional states. These, of course, are a medical problem. Another unpleasant odor emitted from the body is "bad breath," or halitosis. This stems from many causes, each of which should be investigated and corrected. Constipation may be a factor. Improper mouth hygiene, defective teeth, infection of the throat, tonsils and sinuses are all involved. Again unpleasant breath may be attributed to the diet, since the eating of certain foods may be responsible. In any event, unpleasant body odors can be prevented. If you are adhering to the principles of good hygiene, bathing frequently, changing clothing often, and generally paying attention to the concepts of cleanliness, you can safely ward off the offenders—bromhidrosis and halitosis. On the other hand, if the unpleasantness persists, after attention to all these details, let a medical or dental examination lead you to the correction that may be necessary. Do something about unpleasant body odors! Don't be a target for all the facetious advertisements and "cure-alls" on the subject. Be aware and beware of unpleasant body odors.

—*Health Talk*, Illinois State Medical Society, September 11, 1952.

The Soda Fountain

THE SODA fountain has a romance all its own. Soda water originated, according to the newly published N.S.F. Standards for "Soda Fountain and Luncheonette Equipment," as a medicinal mineral water at the beginning of the nineteenth century as an aid to health. It became a popular beverage quite by accident when, more than a hundred years ago, some enterprising soda-fountain operator found that syrups of various flavors could be combined with soda water to make a refreshing and palatable drink. Not until 1874, however, was ice cream added to make the famous ice-cream soda. In 1903 "front counter" service, with syrup pumps, was first introduced. Twenty years later economical mechanical refrigeration made its appearance, and in 1928 the luncheonette arrived when food was made available at the soda fountain. Today there are some 120,000 soda fountains in the U.S., doing an estimated annual business of more than two billion dollars. The soda fountain and luncheonette has become peculiarly an American institution, found in five-and-dime stores, in warships, and on trains and ocean liners, as well as in drug stores and fashionable hotels. The soda fountain is as typically American as baseball. And—it pays to "keep it clean."

$56 Per Employee Per Year

ACCORDING to a recent report on a survey of the cost of absenteeism made by the Benson Laboratories, Inc., Pittsburgh, absenteeism costs employers an average of $56 per employee a year. The survey covered 249 representative companies, and revealed three significant facts. First, less than 25% of the

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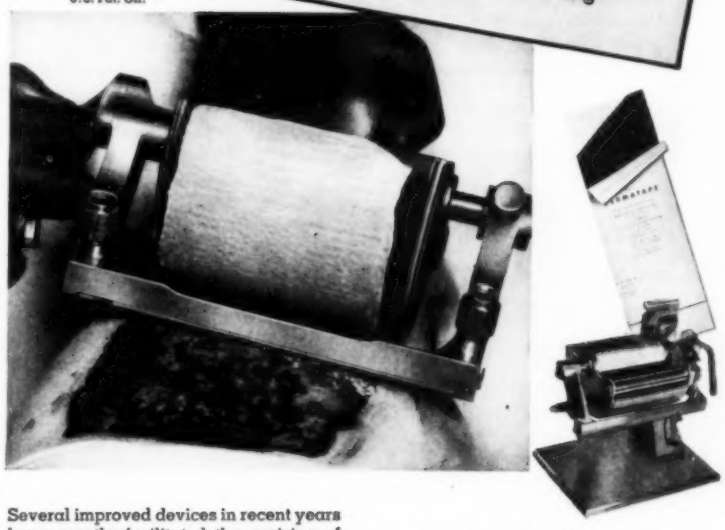

Several improved devices in recent years have greatly facilitated the excision of split skin grafts. None, however, has simplified the subsequent transfer and transplant of the graft to the lesion—*the most difficult and time consuming part of the operation.* The Reese Dermatape technique used with the Reese Dermatome so greatly simplifies the mechanics of skin graft transplanting as to reduce operating time, frequently, to one half or one third.

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business organizations surveyed maintain any records whatever of employee absences. Second, only 8% of the companies surveyed maintain records which are complete enough to permit their use in determining costs of absenteeism. Third, this average yearly cost of $56.02 per employee is the direct cost only, and represents only wages or salaries for which nothing was received in return. Actually, the indirect costs may be even higher. In cash alone, the direct yearly cost of absenteeism, based on an estimated 60 million employed, is nearly $3 5 billion per year. If indirect costs were added to this figure, the over-all cost to business would be staggering!

—*American Business*, July, 1952, quoted in *Office Executive*, September, 1952.

Nature's Microphone

DR. HALLOWELL DAVIS, of the Central Institute for the Deaf of St. Louis, "came up today (September 10) with a theory to explain the mystery of how the ear hears." He said that his theory would shed light on the way other living organs respond to a mechanical stimulus. The human ear is nature's microphone, Dr. Davis said, and movements in the ear narrower than the diameter of a hydrogen atom modify electric currents in the way a variable electric resistance in a carbon microphone modifies a flow of electricity. He spoke to the closing session of the British Association for the Advancement of Science. The inner ear, under the theory advanced by Dr. Davis, has an electric battery and a flow of current. Some of this current leaks through the hair cells. When sound causes vibrations in the inner ear the hairs on the end of the hair cells get pushed around much like the granules of carbon inside a telephone microphone are moved mechanically when a voice speaks into the instrument. Dr. Davis believes that the movement of the hairs brings about a change of resistance to the current and that this change is sufficient to release the relatively large amount of energy needed to send impulses through nearby nerve cells. "On this hypothesis," he said, "the source of the energy that stimulates the nerve is not the original acoustic energy; the hair cells act as valves to control a flow of current already present. Nature, which invented a system of echo-location to guide bats in flight long before we humans ever thought of radar, did not overlook the possibility of a special preamplifier to put in the ear ahead of the standard repeater units of the nerve fibers." A main point of Dr. Davis' theory is that it explains how a tiny mechanical movement smaller than that of a hydrogen atom, the smallest atom in nature, can lead to the relatively strong current in nerve fibers. But its chief importance, scientists said, is that it tackles a primary mystery of physiology: how sense organs are able to respond to a mechanical stimulus and convert it into the

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electric impulses that nerves carry to the brain.

—*Chicago Tribune*, September 11, 1952, (AP) from Belfast, Northern Ireland.

Industrial Health Platters

A NEW series of electrical transcriptions on industrial health are available from the A.M.A.'s Bureau of Health Education for use by local radio stations. The 13 programs in the series point up various phases of the industrial health field. Subjects include: Eye problems in an industry, the aging worker, the handicapped worker, women in industry, occupational disease control, alcoholism, psychological problems of the worker in relation to supervision, absenteeism control, off-the-job time, protective clothing and plant safety, family health, the white collar worker, and control of air and water pollution.

—*Ohio State Med. J.*, August, 1952.

The Brookings Survey

THE average company with some kind of industrial health and safety program is now spending at least three times as much on its employees as it did in 1940. Some of the increase can be chalked up to inflation, but a good share of it is definitely buying better health. And whether the value of these benefits is figured in terms of economics—which can be measured—or as pure humanitarianism—which can't be—the outlay appears justified. That is what Brookings Institution concluded from a study of industrial health service just published as part of a three-year survey, Health Resources in the United States. Health programs in industry have turned out to be smart business. As Brookings puts it, "The health and safety of industrial workers is of paramount importance in maintaining the industrial plant." The proof of this view comes from checking basic labor statistics. Injuries and occupational diseases are down sharply in the plants where industry is taking care of its own. Compensation premiums cost less. Production losses from illness have been reduced, and labor turnover has dropped. These programs have obviously made for stability and economy. But they have also resulted in much immeasurable benefit—improved employer-employee relations and better feeling between the plant and the community. Here is what these achievements have cost: Back in 1940, the National Association of Manufacturers estimated the annual per-capita costs of industrial health services at $8.81. Last year NAM conducted another survey, this time as part of the Brookings study. A total of 1,576 companies, employing almost 1.5-million, answered questions on the costs of health, medical, and safety programs. They came to $25.90 per employee. Brookings figures this understated the cost substantially, because of varying reporting methods. All told, NAM received replies to at least some of its queries from 3,589 member companies, with 3.3-million workers including factory, office, and executive groups—representing more than 22% of workers employed in manufacturing industries in 1950. And every company that had a health and medical program said it used one or more of the following practices (pictures): Employment of physicians on a full-

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time, part-time, or call basis, or some combination of the three. Use of graduate nurses. Employment of trained first-aid attendants. Dispensary. Physical examinations. Visual hearing, or dental care. Out-of-plant medical services, primarily group-health insurance plans purchased for the most part from insurance companies. Physical examinations are of major importance in industrial health programs, the report says. The pre-employment examination, which the report terms "the keystone of preventive measures," is the most widely used. Of the 3,589 reporting companies, 1,893 (52.7%), employing 2.9-million workers, said they gave pre-employment check-ups. These included practically all the companies with over 1,000 employees, over 75% of those with between 500 and 1,000, and 40% of the companies with under 500 employees. "This method of screening the applicant for the job has undoubtedly saved many lives and prevented thousands of accidents," the report stated. Two of the more significant developments in industrial health services are health education programs and the broadening of the health services provided by the plant to include visual, dental and hearing care, and visits to employees' homes by members of the medical and safety staffs. Adoption of these two measures has spread considerably in recent years, the report stated. Of the 3,589 companies which responded to the NAM questionnaire, 1,462 (40.7%) employing 2.5-million workers (75.4% of total employment) reported a health education program. More than 80% of the companies with over 2,500 employees had such programs.

—*Business Week*, August 23, 1952.

Kappa Delta Award

A PRIZE of $1000.00 donated by the Kappa Delta Sorority may be awarded annually by the American Academy of Orthopedic Surgeons for the best research related to orthopedic surgery and performed by an American citizen in the United States. This research must be presented to the Committee on Scientific Investigation of the American Academy of Orthopedic Surgeons before November 1, 1952. Researchers are requested to secure further information from DR. CLAUDE N. LAMBERT, 104 South Michigan Avenue, Chicago 3.

Historical Exhibit

MAN AND WORK," an Exhibit on Industrial Medicine, will open March 10, 1953, and extend through the following July, at the Detroit Historical Museum, Woodward at Kirby. This exhibit is timed to open contemporaneously with the annual meeting of the Michigan Medical Society. Arrangements will be made to hold a meeting of the Industrial Medical Section of the State Society's annual meeting at the Museum, at which time a dedicatory program will be given. The Steering Committee planning the Exhibit includes the following: MAX BURNELL, M.D., Medical Director, General Motors Corporation; TERENCE E. CARROLL, Curator, Industrial History, Detroit Historical Museum; E. A. IRVIN, M.D., Medical Director, Cadillac Division, General Motors Corporation; HARLEY KREIGER, M.D., Medical Director, Ford Motor Company; ROLAND T. LAKEY, Dean, College of Pharmacy, Wayne University; BENJAMIN LINSKY, Chairman, Science and Industry Committee, Detroit Historical Society; LYNDLE MARTIN, M.D., Medical Director, Detroit Edison Company; CAREY P. McCORD, M.D., Consultant, Institute of Industrial Health, University of Michigan; J. J. PRENDERGAST, M.D., Medical Director, Chrysler Corporation; ALFRED H. WHITTAKER, M.D., Consultant in Industrial Surgery.

Emulsion of Bone Marrow

DR. SHIELDS WARREN, Director of Atomic Energy Commission's Division of Biology and Medicine, reports that a specific substance has been found to work against radiation poisoning, and that the discovery is of "very real significance." In testimony before the House Appropriations Committee, Dr. Warren said it has been determined that an emulsion of bone marrow will protect experimental animals against radiation, and added: "The material in itself is not so important as the fact that one gets protection. That is, the bone marrow itself is not so important as the fact that you can get protection by the substance that is formed there. This is an injection from which we ought to be able to get a specific chemical substance that can be used here. This is the same sort of scientific lead as was the failure to grow on mold-contaminated plates, when the initial discovery of penicillin was being foreshadowed. This is the first time a specific substance has been found which will work against radiation."

—*Connecticut State Med. J.*, May, 1952.

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Silicosis Research

THE Anthracite Health and Welfare Fund has granted $552,000 to Jefferson Medical College and Hospital, Philadelphia, for continuation of research on treatment of silicosis, or "miners' asthma." An award of $575,000 began the program five years ago.

—*New York Times*, September 7, 1952.

Boxing Safeguards

FRANK R. FERLAINO, M.D., former Chairman of the Medical Advisory Board of the New York State Athletic Commission, and DR. MAL STEVENS, present Chairman, at a meeting of the National Boxing Association in Montreal, Canada, September 9, suggested that medical examinations, safety procedures and standards be made uniform in all states in which the Association operates. They also suggested that a national committee be established to study the causes of injury and death in the ring, and that a rehabilitation program, sponsored by the Boxing Association, be set up to help injured fighters.

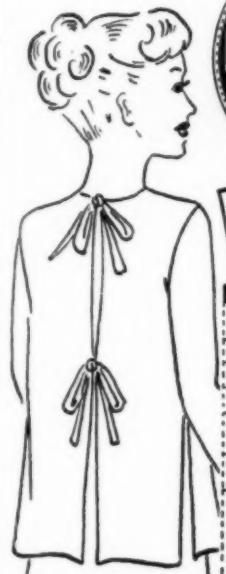
GM Training

ON-THE-JOB training is now being extended to medical students in General Motors' expanding program of industrial medicine. This summer, four medical students from the University of Michigan are spending their vacations working in GM plants with plant Medical Directors. In these plants, they will become thoroughly acquainted with the practical problems of occupational health before they return to their senior year studies at medical school. This practical training is part of GM's broad program of improving the standards of industrial medicine. Throughout industry in general, employment health programs have lagged somewhat behind other phases. GM and other industries now realize the importance of prevention, diagnosis and treatment of industrial disease. Under DR. MAX BURNELL, GM Medical Director, the company has pioneered in industrial health at the University of Michigan. At the end of medical school, young doctors who intend to specialize in industrial medicine can enroll with GM for a further year's work at industrial health departments and in the School of Public Health. In the "on-the-job" summer program, carefully selected students are given jobs in GM plants where they come face to face with actual conditions and work with plant Medical Directors in their day-to-day problems. Result is that the program is going a long way to stimulate interest among medical students in industrial medicine and to attract the highest type of young doctors into this formerly somewhat neglected but vitally important field.

—*Iron Age*, August 21, 1952.

Sick Socialism

HOW SICK Is Socialized Medicine?" is the title of an article by the noted economist,



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—*Bull. Med. Soc. County of Kings*, September, 1952.

Health Advisory Group

THE Research Group for Economic Security has appointed a committee tc advise on technical and administrative aspects of the problem of health in connection with its nationwide survey on the economic aspects of prolonged non-occupational illness

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